Natural Environment Research Council

ARASF

Atmospheric Research Airborne Support Facility

Flight Data Catalogue

Flight

A503

15 December 1996

OMEGA

A503 15th December, 1996
OMEGA
South West Mediterranean

Start time	End time	Event	Height(s)		Hdg	Comments
093651						Take off from Valencia
101720	104624	P1	FL210	50ft	060	Profile P1
105113	112246	R1	300'		320	Run 1, 10 to 9
112431	113404	R2	300'		200	Run 2, 9 to 8
113457	115700	R3	300'		145	Run 3, 8 to 7
115840	120751	R4	300'		240	Run 4, 7 to 6
120840	123405	R5	300'		330	Run 5, 6 to 5
123545	124424	R6	300'		220	Run 6, 5 to 4
124538	130308	R7	300'		150	Run 7, 4 to 3
130613	132431	P2	50'	FL150	290	Profile P2
132845	133343	R8.1	FL150		130	Run 8.1, ARIES cals
133508	134007	R8.2	FL150		285	Run 8.2, ARIES cals
134046	134205	O1	FL150		020	Orbit 1, 50deg, r.w.down
134218	134319	O2	FL150		080	Orbit 2, 60deg, r.w.down
134326	134440	O3	FL150		120	Orbit 3, 55deg, r.w.down
135309	140110	R9	300'		030	Run 9
140202	140700	R10	300'		275	Run 10
140738	142136	R11	300'		210	Run 11
142224	142723	R12	300'		275	Run 12
142819	143818	R13	300'		030	Run 13
143926	144611	R14	300'		275	Run 14
144705	150207	R15	300'		210	Run 15
153049	153811	R16	300'		140	Run 16
154238	155240	R17	300'		345	Run 17
155657	160341	R18	300'		155	Run 18
160939	163511	P3	50'	FL220	345	Profile P3
163511	165505	R19	300'		020	Run 19, ARIES cals
170839						Land at Valencia

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OMEGA

Date: 15/12/96 Flight No: A503

SORTIE OBJECTIVE: To provide a sea surface temperature map for RRS Discovery for SST intercomparison between ARIES, SAFIRE, Ship and Satellite measurements. Atmopsheric and aerosol profiles will also be made.

LOCATION: Western Mediteranian.

Almeria Front

36°32'N	2°16'W	36°16'N	1°33'W
36°31'N	2°07'W	36°04'N	1°25'W
36°28'N	1°58'W	36°49'N	1°18'W
36°25'N	1°49'W	36°30'N	1°00'W
		36°30'N	0°05'W

RRS Discovery

Time (GMT)	Estimated Positions	
13:30	36°14'N	1°46'W

WEATHER: Ideally clear sky conditions for satellite work, but otherwise sufficiently high cloud base for low level flying.

FLIGHT PATTERN:

Transit Outbound

[1] Take-off. Transit from operational base at maximum altitude to position of IMG overpass (via Alicante, Magal).

[2] Straight and level run (180 KIAS) at max altitude to turning point west of Hamra; straight and level run to northern end of stack. + 2 orbits (60°, 50')

RRS Discovery

[3] Establish a track A/B orientated perpendicular to the front and extending 15 nms either side of ships position. Complete two runs A-B,B-A at max altitude.

[4] Commence profile from max altitude to 50 ft, along A-B interupting profile and reversing as necessary. Two straight and level runs (along A-B) to be included at heights specified by aircraft scientist. Profile at 1000 ft per minute down to inversion, 500 ft per minute below.

[5] Two straight and level runs A-B, B-A at 100 ft. Extend one run to allow for calibration (~3 min).

[6] Straight and level run A-B at 300 ft.

SST Mapping

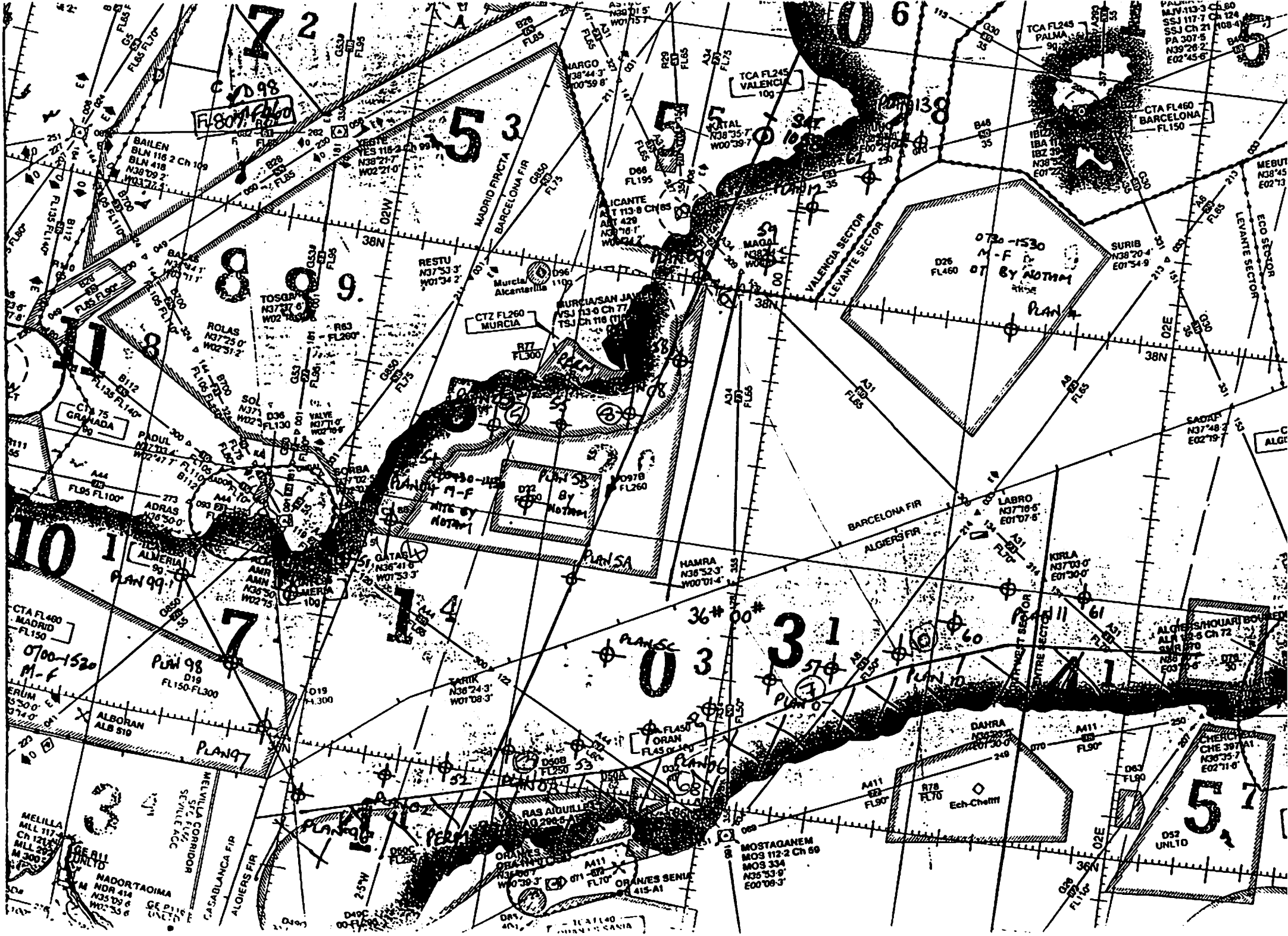
[7] Transit at 300 ft to start point for SST mapping pattern.

[8] Execute straight and level runs of SST mapping pattern.

[9] Profile from 50 ft or minimum safe altitude to maximum altitude at 500 ft/min below inverstion and 1000 ft/min above.

[10] 15 minute straight and level run at maximum altitude.

[11] Transit back to operational base as convenient.


MADRID FIR
BARCELONA FIR
ALGIERS FIR
CASABLANCA FIR
VALENCIA SECTOR
LEVANTE SECTOR
ECO SECTOR
CTA FL460 MADRID FL150
CTA FL460 BARCELONA FL150
TCA FL245 PALMA
TCA FL245 VALENCIA
CTA 75 GRANADA
CTZ FL260 MURCIA
ALICANTE
MURCIA/SAN JAVIER
ALMERIA
ALBORAN ALB 519
MELILLA MLL 117
NADORTAOIMA NDR 414
MOSTAGANEM MOS 112·2 Ch 69
ORAN/ES SENIA 415-A1
ALGIERS/HOUARI BOUMEDIEN
BAILEN BLN 116·2 Ch 109
BLN 418
ROLAS
TOSGA
RESTU
SOL
PADUL
ADRAS
SORBA
GATAS
HAMRA
TARIK
KIRLA
LABRO
SADAR
SURIB
MAGA
DAHRA
RAS AIGUILLE
Ech-Chelff
CHERCHEL
PLAN 98
PLAN 99
PLAN 97
PLAN 96
PLAN 08
PLAN 07
PLAN 10
PLAN 11
PLAN 61
PLAN 53
PLAN 58
PLAN 59
PLAN 60
PLAN 62
0700-1520 M-F
0730-1530 M-F
BY NOTAM
FL80/FL260
FL95 FL100
FL135 FL140
FL150-FL300
FL195
FL245
FL260
FL300
FL450
FL70
FL90
UNLTD
36° 00'
02W
02E
38N
36N

WAY POINT LIST.

T/O — High level HAMRA
Profile down to 50' towards pt (10)
(10) 300ft 55TM
(10)-(9)-(8)-(7)-(6)-(5)-(4)-(3)

Profile 50' → FL150 overship (to FL 25 in no ci)
ESTABLISH A & B and 2 levels. (A-B cross wind)
(ship stationary into wind)
DROP to 1st level A-B (10min)
Drop to 2nd level A-B (10min)
Drop to 100ft. A-B-A or B-A-B + cal.
up to 300ft A-B + cal.
START 300ft 55TM.
Start creeping line ahead search
to ~~map~~ detail map of front.

↓ continue until out of time

— — — — — — — — — — time decision

50ft → recall profile
20 min run if clear
home.

NERC ARASF Atmospheric Research Airborne Support Facility

OMEGA

Date: 15/12/96 Flight No: A503

Aircraft Scientist Debrief:

Large amounts of frontal clouds were encountered which resulted in difficult flying conditions at low level towards the end of the flight. These clouds were heavier than expected (bearing considerable amounts of rain) from local forecasts and satellite imagery. However a sea surface mapping pattern was flown which on a number of occasions clearly showed the temperature gradients associated with the Almerian front. Despite the difficult conditions several intercomparison runs were made past RRS Discovery at 100 and 300 feet.

Several orbits were made when clear skies were encountered at FL150 at the end of a profile. This was to characterize a new baffle in SAFIRE.

Maps of the sea surface temperature were sent to the Hotel, but the aircraft manager was unable to forward them to RRS Discovery.

Following the final profile to maximum altitude an area of Cirrus free sky above was identified. This facilitated zenith calibrations for SAFIRE and ARIES.

POST FLIGHT REQUIREMENTS FORM

Flight No: A503 Date: 15.12.96 A/S Name: S. WILSON
A. KAYE

Aircraft Scientist's Post Flight Requirements:

1. Are any copies of the flight folder required?
   YES [✓] NO [ ] for ...X3..(MRF)..(STH)..RSI..

2. Flight data and folders will normally be discarded after 10 years, is this OK?
   YES [ ] NO [✓] If not OK, state period ..INDEF.

3. Is the flight part of an international project or major campaign?
   YES [✓] NO [ ] Name of Project ....EMFAO.

4. Do you want the video tape kept?
   YES [✓] NO [ ] How long? .....INDEF.

5. Has the Handheld camera or the Camcorder been used:
   YES [✓] NO [ ]
   If yes, do you want the handheld camera film processed:
   immediately [✓] or when the film is finished? [ ]

6. Do you want the cloud physics data kept?
   YES [✓] NO [ ]
   If yes, which disc / file do you want it stored in?..MRF.14.[MFD.A503].

7. Do you want to do the interactive processing?
   YES [ ] NO [✓]

NOTE:

- Members of MRF Radiation and Cloud Physics groups are expected to meet their own requirements for data storage and non-standard processing.
- For non MRF users, Data Management Section will keep the processed data TEMPORARILY until the requirements are made known.
- Any other requirements for post-flight processing and data storage should be discussed with the Data Management Section.
- If copies of the Flight Folder are required, it is the responsibility of the Aircraft Scientist / User to produce them.

AIRCRAFT SCIENTIST'S LOG

Project: OMEGA Date: 15/12/96

Aircraft Scientist: A. Kaye S. Wilson. Flight No: A503 Page 1 of

Natural Environment Research Council

GMT	Event Mark	Run No.	Height	Pres/Rad	INS Heading	Omega Pos'n Latitude / Longitude	Other Info. (eg. clouds, weather, visibility, winds, sea state etc.)	Photo No.
9 42 38		TRANS	83	FL	177	39.18 / -0.54	Thin SC above. some small cu over sea to Port. Sun can be seen through cloud.	
9:53 ~~45~~		TRAN	~~176~~	FL	194	38.53 / -0.50	9800 cloud base thin cirrus above 10500 cloud top clear ahead.	
							Sc below / clear above.	
9:59:40		TRAN	208	FL	137	38.15 / -0.45	Broken sc below with wisps of ~~sc~~ cu visible Ci ahead.	
							Ci above not good for calb. level off at FL 210. and proceed to Top of Provide.	
10:13:45		TRAN	210	FL	197	37.08 / -0.26	Ci above also cu ahead Solid sc below.	
10:17:21		Pl$_s$	210	FL	55	36.88 / -0.17	in cloud. band of blue sky visible ahead.	
							Ice crystal cloud ~~cu~~ — large ice crystals as distinct from yesterday graupels.	
10:24:35							1500 out of cloud. small cu field out to starboard. with sc beyond	
10:27:17		P1	~~104~~	~~FL~~	49	37.31 / 0.61	thin ci Above Ci ~~across~~ to Starboard. Some small cu calm sea & some haze.	
							10:30 SP 1013.8 ~~Go~~ Status from Discovery WD 160 @ 5kts.	
10:32:17		P1$_{int}$	60	FL	~~240~~ 250	37.49 / 0.90	Ci above thin vale + 1/8 thicker Calm sea below.	

AIRCRAFT SCIENTIST'S LOG

Project: OMEGA Date: 15/12/96

Aircraft Scientist: A. Kuyz S. Wilson. Flight No: A503 Page 3 of 9

Natural Environment Research Council

GMT	Event Mark	Run No.	Height	Pres/Rad	INS Heading	Omega Pos'n Latitude / Longitude	Other Info. (eg. clouds, weather, visibility, winds, sea state etc.)	Photo No.
11:34:57	18	R3	300	R	142	37.43 / -0.66		
11:39						37.26 / -0.50	Jump in SST 15.2 → 16°C	
11'46						36.91 / -1.14	Surface streaking hazy - very visible change jump in SST.	
11:54'48	19					36.64 / 0.13	edge of frontal Structure 11:51:30 pegonix star oil tanker just to port	
11:57:00	20	R3e	300	R	149	36.54 / 0.21	overcast 6/8 Sc with some cu visible.	
11:58:40	21	R4	300	R	241	36.48 / 0.13	two vortexes visible of Portside not quite waterspouts but marking surface	
12:07.51	22	R4e	300	R		36.27 / -0.33	dramatic drop in aerosole counts. 4/8 Sc above some cu visibe Seastate 3.	
12:08:40	23	R5	300	R	321	36.29 / -0.38		
						36.63 / -0.66	event 24 lots of surface marking reduced seastate (2)	
						36.90 / -.93	12:18 Aerosol prikt with skiptrack! event 25 surface feathers.	
							Some oil slicks.	
12:34:05	26	R5e	300	R	320	37.32 / -1.35	8/8 high Sc. some cu visible in distance.	

AIRCRAFT SCIENTIST'S LOG

Project: OMEGA Date: 15/12/96

Aircraft Scientist: ~~S. Wilson~~ A. Kaye S. Wilson. Flight No: A503 Page 2 of ~~3~~

Natural Environment Research Council

GMT	Event Mark	Run No.	Height	Pres/Rad	INS Heading	Omega Pos'n Latitude / Longitude	Other Info. (eg. clouds, weather, visibility, winds, sea state etc.)	Photo No.
10:33:42	10	$P1_{cut}$	600	FL	236	37.44 / 0.89	some small cu fields ahead. clear above.	
10:41:50	·	P1	20	FL	168	37.10 / 0.75	Passing throug a ~~small~~ short band of small cu.	
10:46:26	11	$P1_e$	50	R	175	36.94 / 0.78	cloud above calibration Point of Aerosol profile. 1014 sea state 2.	
10:51.11	12	R1	300	R	318	~~36~~.72 / 0.78	overcast cu's head.	
10:59:15	·	R1	300	R	323	37.07 / 0.48	Brighter clear skys ahead ~~sc~~ solid sc above.	
11:01:40						37.19 / 0.36	front visible on water	
	13*						event make 13 surface line with teardrop.	
11:12:37	13	R1	300	R	326	37.62 / -0.03	~~cu~~ highly structured multi layer clouds ahead. some sky gaps but much brighter.	
11:17:26	·	R1	300	R	326	37.82 / -0.21	" sea state 2.	
11:22:45	14	$R1_e$	300	R	316	38.07 / -0.44	Broken sc with ci above ~~sunny~~ sunny).	
11:24:31	16	R2	300	R	196	37.96 / -0.50	hazy overcast ~~broken~~ 7/8 thin sc.	
11:34:04	17	$R2_e$	300	R	196	37.47 / -0.09	4/8 SC some banding visible	

AIRCRAFT SCIENTIST'S LOG

Project: OMEGA Date: 15 / 12 /96

Aircraft Scientist: A. Kaye S. Wilson. Flight No: A503 Page 4 of 9

Natural Environment Research Council

GMT	Event Mark	Run No.	Height	Pres/Rad	INS Heading	Omega Pos'n Latitude / Longitude	Other Info. (eg. clouds, weather, visibility, winds, sea state etc.)	Photo No.
12:35:45	27	R6	300	R	217	37.28 / -1.41	line of cu ahead.	
12:44:23	28	R6e	300	R	218	36.93 / -1.76		
12:45:38	29	R7	300	R	141	36.87 / -1.72	hazy, high ci 8/8 some cu flying away from squalls line?	
						36.78 / -1.63	event mark 30 front. ~1° Temperature Drop.	
							YANG MING LINE another ship. 12:52:02 passed just behind.	
13:02:30						36.18 / -1.09	Rain on window.	
13:03:09	31	R7end	300	R	140	36.16 / -1.08	Low cloud & rain water glassy surface.	
13:04:12	32	P2	501ft	R	283	36.16 / -1.26	brighter ahead 4/4 high cu visible. 1013 sea state 2.	
							36.09 N 001.61 W SW ~3m/s fm 270° (2400 3800, 800mb 5000ft)	
13:24:30	36	P2e	150	FL	286	36.43 / -2.40	clear above 4/8 sc below.	
13:	37	R8	150	FL	125	36.28 / -2.02	CLEAR of Ci ABOVE.	
133343	38	R8	150	FL		36.14 / -1.76		

AIRCRAFT SCIENTIST'S LOG

Project: OMEGA Date: 15/12/96

Aircraft Scientist: A. Kaye S. Wilson. Flight No: A503 Page 5 of 9

Natural Environment Research Council

GMT	Event Mark	Run No.	Height	Pres/Rad	INS Heading	Omega Pos'n Latitude / Longitude	Other Info. (eg. clouds, weather, visibility, winds, sea state etc.)	Photo No.
~~13~~ 133508	39	R8.2	FL 150	P	278	36.08 / -1.81	REMAINING UNDER Ci FREE CONDITIONS	
134007	40	R8.2 ENDS	FL 150	P		36.12 / -2.14		
134046	41	01	FL 150	P		~~51~~	50° ORBIT NO Ci ABOVE	
		02	FL 150	P			60° ORBIT	
		03	FL 150	P			55° ORBIT	
134639			FL 123	P	75	36.10 / -1.92	DESCEND FOR 8 FINESCALE SSTM PATTERN	
135304	47	R9	300	R	27	36.27 / -1.52	START OF SSTM. 8/8 Sc u/Cu ABOVE	
140110	48	END R9	300	R	29	36.66 / -1.30		
140202	49	R10	300	R	269	36.67 / -1.34	8/8 SCu ABOVE; ~ HM 27.	
140700	50	R10 END	300	R		36.65 / -1.65		
140936	51	R11	300	R	210	36.63 / -1.67	REMAINING 8/8 Cu/Sc u ABOVE.	
141540	52		300	R	207	36.27 / -1.91	OVERPASS OF FRONT.	

AIRCRAFT SCIENTIST'S LOG

Project: OMEGA Date: 15/12/96

Aircraft Scientist: A. Kaye S. Wilson. Flight No: A503 Page 6 of 9

Natural Environment Research Council

GMT	Event Mark	Run No.	Height	Pres/Rad	INS Heading	Omega Pos'n Latitude / Longitude	Other Info. (eg. clouds, weather, visibility, winds, sea state etc.)	Photo No.
142112	S3		300	R	207	36.03 / -2.07	E/B OTHERSIDE OF FRONT	
142136	S4	END R11	300	R		36.00 / -2.09		
142224	S5	R12	300	R	267	36.00 / -2.15	8/8 SC ABOVE	
142430			300	R	269	35.99 / -2.29	PRECIPITATION	
142723	S6	R12 ENDS	300	R	268	35.99 / -2.45	STILL SOME RAIN; 8/8 SC ABOVE	
142819	S7	R13	300	R	25	36.04 / 2.47		
143045			300	R	30	36.15 / -2.41	CONTINUING I/TN. VISIB NOT GOOD!	
	S8		300	R	29		CROSSING FRONT AGAIN, SST (HEIMANN DROPS)	
143615	S9		300	R	30	36.39 / -2.24	TEMP DROPS AGAIN, AFTER RISE.	
143618	60	END R13	300	R	29	36.47 / -2.17		
143926	61	R14	300	R	269	36.50 / -2.20	8/8 Cu/SCu	
	62		300	R	267	[illegible]	CROSSING FRONT ON CROSS RUN ⇒ START MOVE RUN NORTHWARDS	

AIRCRAFT SCIENTIST'S LOG

Project: OMEGA Date: 15/12/96

Aircraft Scientist: A. Kaye S. Wilson. Flight No: A503 Page 7 of 9

Natural Environment Research Council

GMT	Event Mark	Run No.	Height	Pres/Rad	INS Heading	Omega Pos'n Latitude / Longitude	Other Info. (eg. clouds, weather, visibility, winds, sea state etc.)	Photo No.
144611	63	R14 END	300	R	319	36.58 / -2.53	MOBY MOVED TO POSITION N. of FRONT. STILL PPTN.	
144705	64	R15	300	R	204	36.57 / -2.57		
1450	65		300	R	205	36.41 / -2.64	START of FRONT; STILL SOME PPTN. SST RISING	
145445	66		300	R	205	36.21 / -2.77	SST NOW RISES AGAIN ? PEAK WITHIN FRONT	
145534			300	R	205	31.17 / -2.80	PPT. INCREASES AGAIN: 8/8 Sc+/Cu. ~~Hail~~! VISIB NOT GOOD	
145840	67		300	R	203	36.02 / -2.90	SST DROPS; PPTN INCREASING	
150207	68	R15 ENDS	300	R	204	35.87 / -3.00		
150803			300	R	57	35.93 / -2.71	MODERATE PPTN /TRANSIT TO SHIP	
150957			300	R	57	35.98 / -2.62	SEA STATE 3-4 VISIB NOT GOOD	
							SURFACE WIND 250 @ 4 KTS, VARIABLE	
151834							SEA STATE 2 LIGHT PPTN SEA STATE DECREASING, V. LIGHT WINDS	
152340			300	R	27	36.52 / -2.16	SEA STATE 1 → 3,4	

AIRCRAFT SCIENTIST'S LOG

Project: OMEGA Date: 15/12/96

Aircraft Scientist: A. Kuyt S. Wilson. Flight No: A503 Page 8 of 9

Natural Environment Research Council

GMT	Event Mark	Run No.	Height	Pres/Rad	INS Heading	Omega Pos'n Latitude / Longitude	Other Info. (eg. clouds, weather, visibility, winds, sea state etc.)	Photo No.
153049	69	R16	100	R	138	36.43 / -1.82	OVERPASS RRS DISCOVERY WIND WESTERLY, 8KTS. PPTN STOPPED. VIS IMPROVED	
154811	70	END R16	100	R	154	36.13 / -1.56	8/8 SCu/Cu ABOVE VISIB DECREASING AGAIN	
153918							20 REPORTS PPTN INCREASING	
154238	71	R17	300	R	340	36.03 / -1.54		
155240	72	END R17	300	R	341	36.52 / -1.78	VISIB FALLING.	
155657	73	R18	100	R	153	36.53 / -1.80	1010P SEASTATE 2, LIGHT PPTN ~ 34 MILES VISIB	
	74	END R18	100	R	161			
160939	75	P3	50	R	335	36.19 / -1.68	1012 mb SEA STATE 2 RATE OF ASCENT 500 ft/min	
161930	76	P3	FL ~~600~~	R	22	36.68 / -1.47	RATE OF ASCENT → 1000 ft/min PASSING THROUGH VARIOUS CLOUD LAYERS, LGHT PPTN.	
1623			FL 103	P	22	36.91 / -1.38	8/8 CLOUD ABOVE + BELOW!	
163511 WP3 RAN	77	END P3 START R19	FL 220	P	2	37.61 / -0.87		
163650			FL 220	P	6		SLIGHT COURSE VARIATION	

AIRCRAFT SCIENTIST'S LOG

Project: OMEGA Date: 15/12/96

Aircraft Scientist: A. Kaye, S. Wilson Flight No: A503 Page 9 of 9

Natural Environment Research Council

GMT	Event Mark	Run No.	Height	Pres/Rad	INS Heading	Omega Pos'n Latitude / Longitude	Other Info. (eg. clouds, weather, visibility, winds, sea state etc.)	Photo No.
163940			FL 220	P	3	37.90 / -0.78	SOLID RAFT PATCH OF Ci OVERHEAD	
164421			"	"	358	38.24 / -0.73	7/8 ACu BELOW, LOOKS TO SCu?	
1646			"	"	358	38.50 / -0.69	SMALL AMOUNT OF Ci (BAND) OVERHEAD	
165340			"	"	358	38.89 / -0.62	CLOUD CLOSING BELOW.	
165505		R19 END	"	"	"	38.99 / -0.60		

Interactive Processing Log

Flight No. A503 Date: ~~18.12.96~~ 15.12.96 User: S. Wilson
Interactive by: M. Rule
Date: 13.1.97

Renav

Accepted Kalman Filter corrections

TWC

Profile plotted :
Line chosen : Profile / (Whole flight) / Other

a = − 0.4904 E+1
b = + 0.3255 E-2
c = + 0.4295 E-6

LWC

✓

ICTP ✓

Heimann / Barnes

No mods made

Flight Leader's Pre/In-Flight Check List

CHEK for auto selection Flight No: A503 Date: 15.12.96 Page..1..of 1

GMT	PARA	NO	D.R.S.	DECODE	INSTRUMENT	EXPECTED VALUES INFLIGHT | *PREFLIGHT*
0712	REF +	5	568	✓		Approx 0568
	REF -	7	2853	✓		Approx 2858
	AOSS	19	1800	Port F/S Stbd O/S	TORQUE 3→3.5	2047 st. and level
	AOA	18	00	Stbd F/S Dan O/S	TORQUE 3.0	2047 st. and level
	RD HT	37	0	0	✓	As Indicated | 0000
	PR HT	8	3876	1006 ½	1005 + 0.2k	As Altimeter
	CABP	14	3306	1004		
*	A/S	9	2 Was 13 earlier	* 40		As ASI | 0000 – 0100
	UP1S	81	167	7		
	UP2S	82	157	2		
	UIRS	83	1929	-24		
	UP1Z	84	151	✓		Approx 0147
	UP2Z	85	145	✓		Approx 0149
	UIRZ	86	2033	–		Approx 2061
	UP1T	87	2749	+5	7.4	As IAT
	UP2T	88	2770	+4		As IAT
	UIRT	89	2789	+3		As IAT
	LP1S	91	126	SPIKING		
	LP2S	92				
all	LIRS	93				
4095	LP1Z	94				Approx 0150
	LP2Z	95				Approx 0146
	LIRZ	96				Approx 2050
	LP1T	97				As IAT
	LP2T	98				As IAT
	LIRT	99				As IAT
	J/W	42	997			As Indicated | 0000
	~~NEPH~~	~~47~~	—			
	HYGR	58	~~3453~~	0.3	0.1	
	HYCC	59	701	✓		696–901
	FDEW	138	2164	8		DP = (DRSU/20)-100 C
	FSTA	139	608			
	DTF	10	2089			
	DTC	11	5	+7	✓	
	NDTF	23	1691			same as De-Iced
	NDTC	24	5	+6	✓	
	INCT	48	2759.			
	~~CCN~~	~~140~~	—			less than 4095 if ON
	TWCD	70	2475	✓		0000–4094
	TSAM	72				0640–1860 | < *min*
	O3	100				
	O3P	106				P≃ (*DRSU* × 0.4) + 145*mB*
	O3RG	113				

Flight Leaders' Pre/In-Flight Check List

BCDS for auto selection

GMT	PARA.	NO.	H/D	D.R.S.	DECODE	INSTR	EXPECTED VALUE
0724	FL NO	1	Hex	503	✓		Flight No.
	GMTH	2	Hex	072	✓		Clock: First 4 No.s
	GMTM	3	Hex	443	✓		Clock: Last 4 No.s
	E/M	4	Hex	5	✓		Event Mark Counter
	INCH	49	Dec				Multipxd Hkeeping
3147 ✓	1552, / 3852 ✓	3148 ✓	841 ✓	3166 ✓	37311 ✓	3146 ✓	124. ✓
	LATC	160	Dec	4094			Latitude
	LONC	161	Dec	4096			Longitude

Total Water Content Meter Check List

TOTW for auto selection Height:

GMT	PARA	NO	D.R.S.	DECODE	INSTRUMENT	EXPECTED VALUES	
						INFLIGHT	*PREFLIGHT*
0726	TWCD	70	2347	✓		0001–4095	
	TNOS	71	932	✓		2000–3460	< *min*
	TSAM	72	77	✓		0640–1860	< *min*
	TAMB	73	2239	✓		2400–3200	
	TSRC	74	2238	✓		2160–2470	
	HTR1	75	2075			0000–4095	< 4095
	HTR2	76	2131			0000–4095	< 4095
	ISRC	77	1022	✓		0001–1230	< *min*
	STAT	78	4089	✓		4095	
	EV1V	170	2043				
	EV2V	171	2043				
	NPWR	172	3509				
	EVIC	173	3968				
	EV2C	174	3968				

BROAD BAND RADIOMETER FIT (pre-Flight only)

	PARA NO	POSITION	DOME	COVERS	OBSCURERS
UPPER	81,84,87 82,85,88 83,86,89	Port Stbd Centre	Clear Red Silicon	(Off) / On	Large/(Small)
LOWER	91,94,97 92,95,98 93,96,99	Port Stbd Centre	Clear Red Silicon	(Off) / On	

Flight Leader's Pre/In-Flight Check List

CHEK Flight No: A503 Date: 15.12.96 Page...1...of 2
for auto selection

GMT	PARA	NO	D.R.S.	DECODE	INSTRUMENT	EXPECTED VALUES INFLIGHT | *PREFLIGHT*
0942	REF +	5	566	✓		Approx 0568
	REF -	7	2853	✓		Approx 2858
	AOSS	19	1933	F/S O/S	TORQUE	2047 st. and level
	AOA	18	1221	F/S O/S	TORQUE	2047 st. and level
	RD HT	37	4095			As Indicated | 0000
	PR HT	8	2818	8.7	✓	As Altimeter
	CABP	14	2995	~~[illegible]~~	968	
	A/S	9	1670	185	186 ✓	As ASI | 0000 – 0100
	UP1S	81	1083	332		
	UP2S	82	896	149		
	UIRS	83	1780	-54		
	UP1Z	84	155	✓		Approx 0147
	UP2Z	85	155	✓		Approx 0149
	UIRZ	86	2072	✓		Approx 2061
	UP1T	87	2854	+1	-2.0	As IAT
	UP2T	88	2849	✓		As IAT
	UIRT	89	2889	✓		As IAT
	LP1S	91	724	232		
	LP2S	92	460	79		
	LIRS	93	0000			
	LP1Z	94	155	✓		Approx 0150
	LP2Z	95	170	✓		Approx 0146
	LIRZ	96	2084	✓		Approx 2050
	LP1T	97	2878	0	-4.4	As IAT
	LP2T	98	2852	+1		As IAT
	LIRT	99	2906	-2.		As IAT
	J/W	42	1562	0.3		As Indicated | 0000
	~~NEPH~~	~~47~~				
	HYGR	58	1201	-40.6	-43 climbing thru FL140	
	HYCC	59	1109	C		696–901
	FDEW	138	1881			DP = (DRSU/20)-100 C
	FSTA	139	608			
	DTF	10	2721			
	DTC	11	4	-7	-7.8	
	NDTF	23	2159.			same as De-Iced
	NDTC	24	4			
	INCT	48	2562			
	~~GGN~~	~~140~~				less than 4095 if ON
	TWCD	70	2509			0000–4094
	TSAM	72				0640–1860 | < *min*
	O3	100				
	O3P	106				P≃ (*DRSU* × 0.4) + 145*mB*
	O3RG	113				

Flight Leaders' Pre/In-Flight Check List

BCDS for auto selection

GMT	PARA.	NO.	H/D	D.R.S.	DECODE	INSTR	EXPECTED VALUE
	FL NO	1	Hex	503			Flight No.
	GMTH	2	Hex	095			Clock: First 4 No.s
	GMTM	3	Hex	301			Clock: Last 4 No.s
	E/M	4	Hex	7			Event Mark Counter
	INCH	49	Dec				Multipxd Hkeeping
2439	1260 3855	2442	1243	2442	3756	2439	174 ✓
	LATC	160	Dec	438	37		Latitude
	LONC	161	Dec	4090	-1		Longitude

Total Water Content Meter Check List

TOTW for auto selection Height: FL180 ↗

GMT	PARA	NO	D.R.S.	DECODE	INSTRUMENT	EXPECTED VALUES INFLIGHT | *PREFLIGHT*
0954	TWCD	70	1322	✓		0001–4095
	TNOS	71	2545	✓		2000–3460 | < *min*
	TSAM	72	1291	✓		0640–1860 | < *min*
	TAMB	73	2511	✓		2400–3200
	TSRC	74	2226	✓		2160–2470
	HTR1	75	2494	✓		0000–4095 | < 4095
	HTR2	76	2250	✓		0000–4095 | < 4095
	ISRC	77	1015	✓		0001–1230 | < *min*
	STAT	78	4095	✓		4095 |
	EV1V	170	3472			
	EV2V	171	3140			
	NPWR	172	2687			
	EVIC	173	4013			
	EV2C	174	3995			

BROAD BAND RADIOMETER FIT (pre-Flight only)

	PARA NO	POSITION	DOME	COVERS	OBSCURERS
UPPER	81,84,87 82,85,88 83,86,89	Port Stbd Centre	Clear Red Silicon	Off / On	Large/Small
LOWER	91,94,97 92,95,98 93,96,99	Port Stbd Centre	Clear Red Silicon	Off / On	

Flight Leader's Pre/In-Flight Check List

PTO →

CHEK Flight No: Date: Page.....2.....of 2
for auto selection

GMT	PARA	NO	D.R.S.	DECODE	INSTRUMENT	EXPECTED VALUES
						INFLIGHT | *PREFLIGHT*
	REF +	5				Approx 0568
	REF -	7				Approx 2858
	AOSS	19		F/S O/S	TORQUE	2047 st. and level
	AOA	18		F/S O/S	TORQUE	2047 st. and level
	RD HT	37				As Indicated | 0000
	PR HT	8				As Altimeter
	CABP	14				
	A/S	9				As ASI | 0000 – 0100
	UP1S	81				
	UP2S	82				
	UIRS	83				
	UP1Z	84				Approx 0147
	UP2Z	85				Approx 0149
	UIRZ	86				Approx 2061
	UP1T	87				As IAT
	UP2T	88				As IAT
	UIRT	89				As IAT
	LP1S	91				
	LP2S	92				
	LIRS	93				
	LP1Z	94				Approx 0150
	LP2Z	95				Approx 0146
	LIRZ	96				Approx 2050
	LP1T	97				As IAT
	LP2T	98				As IAT
	LIRT	99				As IAT
	J/W	42				As Indicated | 0000
	NEPH	47				
	HYGR	58				
	HYCC	59				696–901
	FDEW	138				DP = (DRSU/20)-100 C
	FSTA	139				
	DTF	10				
	DTC	11				
	NDTF	23				same as De-Iced
	NDTC	24				
	INCT	48				
	CCN	140				less than 4095 if ON
	TWCD	70				0000–4094
	TSAM	72				0640–1860 | < *min*
	O3	100				
	O3P	106				P≃ $(DRSU \times 0.4) + 145mB$
	O3RG	113				

Flight Leaders' Pre/In-Flight Check List

BCDS for auto selection

GMT	PARA.	NO.	H/D	D.R.S.	DECODE	INSTR	EXPECTED VALUE
	FL NO	1	Hex				Flight No.
	GMTH	2	Hex				Clock: First 4 No.s
	GMTM	3	Hex				Clock: Last 4 No.s
	E/M	4	Hex				Event Mark Counter
	INCH	49	Dec				Multipxd Hkeeping
	LATC	160	Dec				Latitude
	LONC	161	Dec				Longitude

Total Water Content Meter Check List

TOTW for auto selection Height: 300ft

TAT = 13.6

occasional status light flash

GMT	PARA	NO	D.R.S.	DECODE	INSTRUMENT	EXPECTED VALUES INFLIGHT | *PREFLIGHT*
1445	TWCD	70	2755	✓		0001–4095
	TNOS	71	2550	✓		2000–3460 | < *min*
	TSAM	72	1396	✓		0640–1860 | < *min*
	TAMB	73	2869	✓ occasional spike		2400–3200
	TSRC	74	2260	✓		2160–2470
	HTR1	75	1903			0000–4095 | < 4095
	HTR2	76	1652			0000–4095 | < 4095
	ISRC	77	1013			0001–1230 | < *min*
	STAT	78	4095			4095 |
	EV1V	170				
	EV2V	171				
	NPWR	172				
	EVIC	173				
	EV2C	174				

BROAD BAND RADIOMETER FIT (pre-Flight only)

	PARA NO	POSITION	DOME	COVERS	OBSCURERS
UPPER	81,84,87 82,85,88 83,86,89	Port Stbd Centre	Clear Red Silicon	Off / On	Large/Small
LOWER	91,94,97 92,95,98 93,96,99	Port Stbd Centre	Clear Red Silicon	Off / On	

Flight Leader's In-Flight Log

Flight No A 503 Date 15.12.96 Page 1 of 4

Video Tape
No. A503 #1
Ends 1240
FFC / DFC / RFC

	GPS	INU
Lat	39° 29.35N	39° 29.36 N
Long	000° 28.53W	000° 28.53W
Time	07:09:22	07:09:49
Status	✓	GC ALIGN.

DRS recording to HORACE (y)/ n

HORACE recording to disc (y) n

SATCOM sending pos. reports (y) n

GMT	EVM	Height	QNH	Hdg	IAS	TAT	DP	DI Htr	CAMERA	Wind/ Sea st.
063946		START	RECORDING							°/ms⁻¹
0855.		INU to	NAVIGATE							
093651		TAKE OFF	FROM	VALENCIA.						
0945		Start Video FFC							FFC	
		climb to	Transit	[illegible]	alt.	FL210				
		Cirrus above so no	cals							
			START	PROFILE	P1 ↓			1000ft/min		
101720	8	FL210	—	060	180	-21.2	-20.7			271/29.
			Interrupt	PROFILE	P1					
103219	9.	FL60	—	055						
			Recommence Profile		P1 ↓					
103342	10	FL60	—	240						
			END	PROFILE	P1					
104624	11	50ft	1014	180					Sea State 2.	
			START	RUN	1.		(10) → (9)			
105113	12.	300ft	1014	325	185	15.1	12.5			199/4
105234.		Video to	DFC						DFC	
105833		Heimann	cal (12 → 15°C)							

Research Flight

VIDEO DFC mapping

Video Tape
No. A503 #1
Ends 1240
FFC / DFC / RFC

	GPS	INU
Lat	37'19.38 N	37'22.93 N
Long	0'14.96E	000'11.66E
Time	11:06:53	110711
Status	✓	NAV.

DRS recording to HORACE	y / n
HORACE recording to disc	y / n
SATCOM sending pos reports	(y) / n

GMT	EVM	Height	QNH	Hdg	~~IAS~~ SST	TAT	DP	DI Htr	CAMERA FFC/DFC	Wind/ Sea st.
			END	RUN	1.					
112246	14.	300ft	1014.	320		14.5	9.8		B.	
112248		Heimann	cal.	(12→18)					FFC	
			START	RUN	2.		(9)→(8)			
112431	16	300ft	1014	200	183	14.7	10.0		DFC	052/4.
			END	RUN	2					
113404	17	300ft	1014	200.						
			START	RUN	3		(8)→(7)			
113457	18	300ft	1014	145		14.1	10.0		DFC	005/3.
			END RUN 3							
115700	19.	300ft	1014	145.	14.6				FFC	
1157		Heimann	Cal (12→18)							
			START	RUN	4.		(7)→(6).			
115840	21	300ft	1014	245	16.09				DFC	
			END	RUN 4.						
120751	22.	300ft	1014.	240	15.8	14.9	12.6		FFC	
			START	RUN	5		(6)→(5)			
120840	23.	300ft	1014	330				55.3.	DFC	
120850		Heimann	cal	(12→18)						
121709	24.	A/c Scrambles EVM						SS 1/2		
			END	RUN	5					
123405.	25	300ft	1014	330	14.94	15.2	9.5	SS	FFC	

Met Research Flight

1210 sst map.

Flight Leader's In-Flight Log

Flight No A ...503..... Date ...15.12.96..... Page ...2... of ...4...

Video Tape	
No.	A503 #2
Ends	~~1540~~ 1535
	✓ ✓
FFC / DFC / RFC	

	GPS	INU
Lat	36'49.13N	36'47.43N
Long	1'39.86W	1'38.40W
Time	12:47:10	12:47:44
Status	✓	NAV ✓

DRS recording to HORACE (y) n

HORACE recording to disc (y) n

SATCOM sending pos. reports (y) n

GMT	EVM	Height	QNH	Hdg	~~TAS~~ SST	TAT	DP	DI Htr	camera	Wind/ Sea st.
123410		Heimann	cal (12→18)							
			START	RUN	6		⑤→⑥			
123545	27	300ft	1014	220	15.23	15.1	11.3		DFC	030/4.
124140	/46	Stop Video / Start Video								
			END	RUN	6		raining		FFC	
124424	28	300ft	1014.	220	15.04	14.6	13.8		[redacted]	302/0
			START	RUN	7		④→③			
124538	29.	300ft	1014	145	14.93	14.6	13.1		DFC	
			END	RUN	7					
130308	31	300ft	1014	150					[redacted] glassy sea. FFC	
		SSTMAP	— sent at		1310Z	(6 hits!)				
130312		Heimann	cal. (12-18).							
			START	PROFILE P2	↗		[redacted] 500ft/min			
130613	32.	50ft	1013	290	·		sea state = 2.		DFC.	
	(13)	36'16N	001 33: — ship steaming to this pos. (RRS Discovery).							
131601	3	6500ft	↑ increase r.o.c. to				1000ft/min			
1322		Send SST	→ ship							
			END	PROFILE P2						
132431	36.	FL150	—	290						

Research Flight

376

Video Tape
No. A503 #2
Ends 1535
FFC / DFC / RFC

	GPS	INU
Lat	36'13.25,	36 12.70
Long	1'55.65W	1'53.43W
Time	133137	13:32:01
Status	✓	NAV ✓

DRS recording to HORACE y / n

HORACE recording to disc y / n

SATCOM sending pos reports (y) / n

GMT	EVM	Height	QNH	Hdg	IAS	TAT	DP	DI Htr		Wind/ Sea st.
			START	RUN	8.1		ARIES CALS			
132845	37	FL150	—	120	190	-9.2	-10.3			267/23
			END	RUN	8.1			FFC		
133343	38	FL150	—	130.						
			START	RUN	8.2		ARIES CALS			
133508	39	FL150	—	290	186	-9.1	-11.2	FFC		277/21
			END	RUN	8.2					
134007	40.	FL150	—	285						
134046	41	FL150	—	020	START ORBIT 1,			50° bank, r. wing down		
134205	42	FL150	—	020	END ORBIT 1					
134218	43	FL150	—	080	START ORBIT 2			60° r. wing down		
134319	44	FL150	—	080	END ORBIT 2					
134326	45	FL150	—	120	START ORBIT 3			55° r. w. down.		
134440	46	FL150	—	120	END ORBIT 3					
			START	RUN	9					
135309	47	300ft	1013	030	181	14.3	c 33.6 ← max cool.			
135630		Heimann	cal (12 → 18°)							
			END	RUN	9					
140110	48.	300ft	1013.	030				DFC.		
			START	RUN	10					
140202	49	300ft	1013	275						
			END	RUN	10					
140700	50	300ft	1013	275						

Met Research Flight

INS roll. 560 para. → 50.

+7..

Flight Leader's In-Flight Log

Flight No A ..503..... Date ..15.12.96..... Page ..3..... of ..4.....

Video Tape
No. A503
Ends 1535
FFC / DFC / RFC

	GPS	INU
Lat	36'29.31N	36'28.85N
Long	2'13.93W	2'14.51W
Time	144045	14:41:20
Status	✓	NAV ✓

DRS recording to HORACE (y) / n

HORACE recording to disc (y) / n

SATCOM sending pos. reports (y) / n

GMT	EVM	Height	QNH	Hdg	IAS	TAT	DP	DI Htr		Wind/ Sea st.
			START	RUN	11	across front				
140738	51	300ft	1013	210.						
			END	RUN	11					
142136	54.	300ft	1013	210.		14.1	12.2			6
			START	RUN	12					
142224	55	300ft	1013	275	181	13.9	13.4			047/3.
			END	RUN	12					
142723	56	300ft	1013	275						
			START	RUN	13					
142819	57	300ft	1013	030						
			END	RUN	13					
143818	60	300ft	1013.	030						
			START	RUN	14					
143926	61	300ft	1013.	275						
			END	RUN	14					
144611	63	300ft	1013	320						
			START	RUN	15					
144705	64	300ft	1013	210	14.75	13.6	13.1	light precip		359/2.
145550		Precip getting heavier (to FFC)				Hein back.				
145854		ss 4 few white caps.								052/7.

et Research Flight

Heimann cal at end of mapping 300ft ≃ 1450

Video Tape	
No. A503 #2	#3
Ends 1535	1835
FFC / DFC / RFC	

	GPS	INU
Lat	36'07.38N	36' 09.15
Long	2'23.46W	2' 23.95
Time	151515	15:15:50
Status	✓	✓

DRS recording to HORACE	y / n
HORACE recording to disc	y / n
SATCOM sending pos reports	y / n

GMT	EVM	Height	QNH	Hdg	IAS SST	TAT	DP	DI Htr	CAMERA	Wind/ Sea st.
			END RUN 15							
150207	68	300ft	1013.	210	14.57	13.2				
150540		Heimann	cal. (12→18)							
1520		tracking towards ship							SS 2	light precip
						-			SS 3/4	
					Pos	(13)	36 14.	64N		
			START RUN 16				·1 36	·44	SS 1	
153049	69	300ft.	1013.	140	14.6	14.6	13.9		DFC	270/4
			END	RUN 16						
153811	70	100ft	1013	150.		back	tst precip, viz		pos	
153815		Heimann	cal					FFC		
153940		Stop Video		#2						
153950		Start Video		#3						
			START	RUN	17					
154238	71	300ft	1013	345	16.25	13.6	c 15.3	DFC		
			END	RUN	17					
155240	72.	300ft	1013.							
155243		Heimann	cal (12→18)							
								FFC.		
			START	RUN	18					
155657	73	100ft	1013.	155					SS 2	light prec
			END	RUN	18					
160341	74.	100ft	1013	170						
160344		Heimann	cal 12→18							

Flight Leader's In-Flight Log

Flight No A ..503..... Date .....15..12..96..... Page .....4... of ...4.....

Video Tape
No. A503 #3
Ends 1830
FFC ✓ / DFC ✓ / RFC

	GPS	INU
Lat	36'31.70	36 33.36N
Long	1'30.33	001 28.81W
Time	161716	161754
Status	✓	NAV ✓

DRS recording to HORACE (y) / n

HORACE recording to disc (y) / n

SATCOM sending pos. reports (y) / n

GMT	EVM	Height	QNH	Hdg	~~IAS~~ SST	TAT	DP	DI Htr	CAMERA	Wind/ Sea st.
			START	PROFILE	P3 ↗		50cfl/min			
160939.	75	50 ft	1013	345	15.72			SS 2	DFC.	065/5
161930	76	FL60	reset	to 1000 ft/min						
			~~STBY~~	END	PROFILE	P3 ↓	START	RUN 19		20min
163511	77.	FL ~~200~~ 220	—	020					FFC	
			END	RUN	19					
165505.	78	FL220	—	360		-25.6	-21.4			275/20
170839.		Land at VALENCIA								
171220		Stop Video								
172050		STOP RECORDING				GPS		39' 29.31N		
						Pan Pos.		000' 28.45W		

: Research Flight

ETA 1715

Video Tape
No.
Ends
FFC / DFC / RFC

	GPS	INU
Lat		
Long		
Time		
Status		

DRS recording to HORACE y / n

HORACE recording to disc y / n

SATCOM sending pos reports y / n

GMT	EVM	Height	QNH	Hdg	IAS	TAT	DP	DI Htr		Wind/ Sea st.

VIDEO TAPE LOG

Flight No A 503

Project OMEGA Date 15.12.96

Tape No A503 #1. User S.WILSON A.KAYE Retention Period Indefinitely

GMT	Tape Counter	Camera Position	Remarks
094500	0000	FFC	START RECORDING.
101720 → 104624		"	PROFILE P1 ↓, FL210 → 50ft.
105113 → 112246		DFC IFFC	RUN 1, 300ft 10 → 9
112431 → 113404		"	RUN 2, 300ft 9 → 8
113457 → 115700		"	RUN 3, 300ft 8 → 7
115840 → 120751		"	RUN 4, 300ft 7 → 6
120840 → 123405		"	RUN 5, 300ft 6 → 5
123545 → 124424		"	RUN 6, 300ft 5 → 4
124140			END OF TAPE

Met Research Flight

VIDEO TAPE LOG

Flight No A 503

Project OMEGA Date 15.12.96

Tape No A503 #2 User SWILSON A. KAYE Retention Period Indefinitely

GMT	Tape Counter	Camera Position	Remarks
124146	0000	FFC / DFC	START RECORDING
124538 → 130308		"	RUN 7, 300ft 4 → 3
130613 → 132431		"	PROFILE P2 ↗, 50ft → FL150
132845 → 134007		"	RUNS 8.1, 8.2, FL150, Avias calb
134046 → 134440		"	ORBITS 1, 2, 3, 50°, 60°, 55° bank.
135309 → 140110		"	RUN 9, 300ft
140202 → 140700		"	RUN 10, 300ft,
140738 → 142136		"	RUN 11, 300ft
142224 → 142723		"	RUN 12, 300ft
142819 → 143818		"	RUN 13, 300ft
143926 → 144611		"	RUN 14, 300ft
144705 → 150207		"	RUN 15, 300ft
153049 → 153811		"	RUN 16, 100ft
153940			END OF TAPE

Met Research Flight

VIDEO TAPE LOG

Flight No A 503

Project OMEGA Date 15.12.96

Tape No A503 #3 User S. WILSON A. KAYE Retention Period Indefinitely

GMT	Tape Counter	Camera Position	Remarks
153950	0000	FFC / DFC	START RECORDING
154238 → 155240		"	RUN 17, 300ft
155657 → 160341		"	RUN 18, 100ft
160939 → 163511		"	PROFILE P3↗, 50ft → FL220
163511 → 165505		"	RUN 19, FL220
170839		"	Land. @ Valencia
171220			STOP RECORDING.

1. Pitot Pressure reading 13 DRSU on preflight, has been zero for the last few flights

2. TEVM – RV display intermittent

3 Horace · Preflight DRS data not aligned with ISS 30 Emergency on optic = 13.

4. Video Switch: FC DISPLAY HAVE TO ADJUST CONTRAST & BRIGHTNESS EVERY TIME THE SCREEN IS CHANGED
ER DISPLAY - INTERMITTENT DISPLAY, MOSTLY BLANK.

5. FWS : reading ≃ 20°C warmer than TWC or AT
6. ICTP : " ≃ 7°C warmer than DI INDE at FL210

7. AOSS : very 'stepped' signal at FL210
8. SATCOM: Test message to ship failed due to error code DEE
9. SAFIRE = looking straight after alt 60° ? 58° : maybe not, only got 58° max. 50°
10. TWC : status light flashing at 14 25 intermittently. Para 78 not responding. TAMB spiking (14 49 55) very occasionally. 300ft in precip, TAT = 13°C.

11. Interom : fwd cargohold boxes - so very loud 400Hz type noise all the time. doesn't go when PA deselected

12 box 8, port fwd - very intermittent

13 Lower BBRs U/S most of time

MARTIAN LOG

Sheet 1 /5

Flight No: AS03 Martian: 1/H Date: 15 / 12 /96

Take-off ETD: 0920 Z from : Valencia Landing ETA: 1730 Z into : Valencia

Pan surface : Concrete / ~~Tarmac~~ Dry / ~~Wet~~ IAT : 4-6°C at 0735 Z

ST : 10·2°C " "

Weather : 6/8 Ac (thin) Light dew condensing.

	MARSS	Deimos
Instrument Status:	Light salt deposits on Mirror	OK
	Cleaned window	Cleaned window
P1 flight Action:	MUX sticky starting	
C rating Mode	FERA PRT: A/B/C/D/E Pol:Q	Dem 7-64 Scan: 000 Pol: 00
Receiver Power On	07:12:	07:12:
Receiver Stable by	: :	: :
	Start time - End time	Start time - End time
Target warm-ups	: : -	: : - : :
Liquid Nitrogen Cal	N_2:LN_2: - Should have refilled Dewer (R2P3) before departure!	N_2 LN_2 : - : :
Ambient Calibration	08:59 : - 09:01 :	08:40:00 - 08:55 :
Ambient Target Temp	+11.8 °C +11.9 °C T_n 281K	+11.2 °C / +11.8 °C T_n 282/283K.
Power Changed Over	: :	
Re iver Stable by	: :	: :

Trials Summary Amb Cal Temps measured with Wire TC probe on Wavetech 2030 DVM.

Interesting Qualitative experience.
Data probably U/S for surface work, due to v. dense cloud + ppt. Could produce LWP's.

MARSS Motor 'froze' in rain at 1436Z (Had a 'weak pulse' on initial boot after C.P.C.O Could not be reset.

h Level Cal	NONE - : :	FL

Flight: A503 **Date:** 15/12/96 **Operator:** TJH

Time	Run Label	Status/Remarks
0828		MARSS MIIX needing lots of reseting.
		Freezing + Ramping
0920		Ground Power Changeover (LMD LEDs not staying ON as long as using But seem looks OK)
		Take off Valencia
0954		MARSS Gains + Tb's mad after T/O
		Reset did nothing
		Rebooting LMD did the trick
0957		Gains stabilising quickly!
		But Ci will cover sky before cal can be done
101720	P1s FL210 ↓	through ice cloud. Ci above.
		Small Ci field below
		Zen Tb's both decrease during profile below cloud.
102219	P1; FL060	↓ Could be cal? Mirror condensation?
103342	P1c "	Ghot 157 dipped ~0.3 counts/K Gsky Flat.
1037		50GHz "V" decreasing faster than "H" on profile
104624	P1c 50'	"Showers ahead!"
		Plot n24 ↓ Radalt ⟶ few K bias at 300'
		n50 ~3 K
		n89 ~1 K
	SS2.	Big n157 ~0 K.
105113.	R1s. Pt10 300'	↑ Spikes in nadir Tb's under Tb's
		(ct Tz + UBBR)
1110140		Crossing Almera just. Overcast.
		No noticable change in underlying Tb read
		at 24 + 50G 89: 200-195. 157 252-247
1117	SS2.	155-157 ~200-200. ∴ Cloud above
		Refl. of A/C in SSit at ~1113 Low SS

ight: A503 Date: 15/12/96 Operator: TJH.

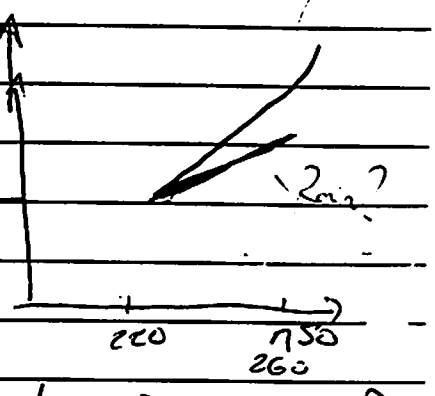
Time	Run Label	Status/Remarks
1117	SS2.	Noise of Deimos Tb's just halved /
1109-1119		Ben Tb's have be flat (57K + 145K).
112246	R1e (Pt9) 300'	
112421	R2s 300'	Tzen still flat (55 + 144K)
1129		Aerosol increasing (~w/s ↑) 570 wks
113404	R2e (Pt8) 300'	Small step inc in Mod24 (~2K) not SOG ?
113457	R3s SS2.	
114121		White caps spotted, coinc. with N24 ↑ 2-3K
1146		(Low level cloud (var) above)
1142-1147	RFI	from Tx. Some Hotcam SS2.
115700	R3e (Pt07)	1156. N24 + N50 ↑ 6K. Clouds building above
		Funnel cloud sighted Ben Tb's ↑
115840	R4s	Jump ~1K in ST after Cal. Small increase of
		SSP near coast
120751	R4e? (Pt6) 300'	Slight rain Tb's ↑.
120840	R5s SS3	Regular white caps out of pm.
1207		MARSS ART MUX Froze
1219	SS1	
1220		RESET MARSS CPU Deimos Tb's noisy
1225		"Oily" warm tongue Surface structure & SST jump
		It is oil! No increase in R5 Deimos Tbs
1231		287 = 10 2157 = 172 289 = 203 2157 = 256 Ts = 15°C =
1233		'Glassy' appearance gone Textured Cloud ↓
123405	R5e 300' (Pt5)	Uniform (homogenous) Cloud above
123545	R6s	
124140		Turbulence Increasing MARSS Tz ↑
124424	R6e Pt4?	

light: A503 Date: 16/12/96 Operator: A.J.H.

Time	Run Label	Status/Remarks
124548	R7s (Pt4) 300'	PPt stopped
130308 ~~130254~~	R7e (W of Pt3)	Rainfalling Just time for a post lunch stump. {But no lunch yet!}
130613	P2s. 30'	SS2 QNH 1013 hPa. thin cloud.
	2400'	Cu tops
1306	Change to 1000 ft.	Marine Band Tx do not cause RFI
132431	P2e FL150	Clear above.
132845	R8s FL150	MARSS CPU reset. (Froze since 1245!)
133343	R8.1e "	Clear above, but too low for MARSS cal
133508	R8.2s "	Reciprocal for L.W. cals
	R8.2e	
134106?	01s. +50°	
	02 +60°	No tines — ops closed!
	03 +55°	
1359		Rainfalling.
140110	R9e 300'	
140202	R10s	
140700	R10e.	MARSS OK.
140748	R11s.	
141050	SS2	Crossed a line of flotsam Homogeneous Cloud Above
141803		light opt.
142224	R12s.	" to mod. T_{bb} ↑ 157 Saturated. 89 ↑ 268K
142723	R12e	
142819	R13s	Still in Rain n50 almost sat n24 not!
~1436		Step in n50 ↑10K front?
143818	R13e.	MARSS Motor Stuck Cannot reset!
144611	R14e	MARSS still stuck
144709	R15s.	Power down LMD box for 10 mins & retry
		Fucking That, I'll shut MARSS down & Reset all PSUs

Flight: A503 Date: 15/12/96 Operator: TdH.

Time	Run Label	Status/Remarks
1459		SS4 now whitecaps. Powered MARSS Rx ↓
150207	R15e	All PSU LEDs lit Didn't help!
150606		Now in Continuous ppt.
		Deimos ΔPol drops under showers
151837	SS2	No whitecaps Vis ↑
152045	SS1	
152343	SS3-4.	
152841	1013 SS2	Dropped to 100'
153049	R16s 100'	to Overfly ship. Skies above clearer
153432	SS1	Deimos Th's flat(ter)
154800		2D-C : S/l
155240	R17e	Short of ship to allow cal
155657	R18s SS2 100'	QNH 1013.2 light ppt.
160341	R18e 100'	At Ship.
160939	R3s SS2 50'	" QNH 1013
		Transit back at FL220
		under clear skies
		above Ss over land.
		But MARSS LWD still U/S ⇒ No Cal. Poss
	Land	Valencia.



Flight Number: A503 Operators name: J CRAWFORD Date: 15 DEC 96 Page 1 of 5

Time (GMT)	Event mark	Run no.	Height	Filter posn.	Mirror posn.	Shutter status up	Shutter status low	Hor link (tick)	Temp diff Ref-BB	Sol Zen	Comments
073000				Ø123	NADIR	C	O				HOT TARGET CAL BOOTED A503_1.PRE.
073300				Ø123	NADIR	C	O				HOT CAL START 329/300
074400											end HOT CAL.
074600				Ø123	COLD	C	O				COLD CAL START 286/300.
075000											end COLD CAL
075100				Ø123	NADIR	C	O				SW CAL START
080100											end SW CAL.
080300				Ø123	HOT	C	O				HOT CAL START 319/300
082500											end HOT CAL.
											HORACE & PC recording stopped.
094500											A503_1.FLT BOOTED
094800				Ø123	HOT	C	C				HOT CAL start/transit 316/300.
											Cirrus prevents zenith or orbit calc.
101015								768			
101050								800			
101200				Ø123	COLD	C	C				COLD CAL start 291/300.
103300											ROD heater off.
104500				01	NADIR	C	C				setup for first run.

light Number: A503. Operators name: J CRAWFORD. Date: 15 DEC 96 Page 2 of 5

Time (GMT)	Event mark	Run no.	Height	Filter posn.	Mirror posn.	Shutter status up	Shutter status low	Hor link (tick)	Temp diff Ref-BB	Sol Zen	Comments
05:13		1	300	Ø1	NADIR	C	O				Run 1 Nadir view
05310		1	300	Ø1	30	C	O				Run 1 30° view.
05520		1	300	Ø1	50	C	O				run1 50° view
05721		1	300	Ø1	NADIR	C	O				run1 nadir view.
10200		1	300'	Ø1	30	C	O				run1 30° view
10350		1	300'	Ø1	50	C	O				run1 50° view.
											bounced out from 50° to 60° for a short while
10700		1	300'	Ø1	NADIR	C	O				Nadir view
10950		1	300'	Ø1	30°	C	O				30°
11360		1	300'	Ø1	50°	C	O				50°
11511		1	300'	Ø1	NADIR	C	O				Nadir view.
11 2746											end run 1
11 2431		2	300'	Ø1	NADIR	C	O				run 2.
11 3404											end run 2.
11 3457		3	300'	Ø1	NADIR	C	O				run 3 Nadir.
3700		3	300'	Ø1	30	C	O				30 — bounced to 40 at new point
3900		3	300	Ø1	50°	C	O				50
4100		3	300	Ø1	NADIR	C	O				nadir.
4530		3	300'	Ø1	30°	C	O				30°
4755		3	300'	Ø1	50°	C	O				50°
4845								3712			Horiz check.
4913.								3744			
5000		3	3001	Ø1	NADIR	C	O				nadir
11 5700											end run 3.
1 2800			300'	2	NADIR	C	O				set up for subpoint runs.
1 5840		4	300'	2	NADIR	C	O				run 4
20751		4									
12061 40.		5									
13 3405		5									

AFIRE OPERATOR'S LOG

Flight Number: A503 Operators name: J. CRAWFORD Date: 15 DEC 96 Page 3 of 5

Time (GMT)	Event mark	Run no.	Height	Filter posn.	Mirror posn.	Shutter status up	Shutter status low	Hor link (tick)	Temp diff Ref-BB	Sol Zen	Comments
135145		6	300'	2	NAD	C	O				Run6
144424		6									end.
145438		7	300'	2	NAD	C	O				run7
150200						C	C				end. (rain)
150300		7	~~300~~	0123	HOT	C	C				HOT CAL
			Profile								
											REBOOT A503_2.FLT
~~153500~~		~~8.2~~	~~15000~~	~~0~~	~~ZEN~~	~~O~~	~~C~~			~~63~~	
153505		8.2	15000	0123	ZEN	O	C				ZEN CAL
155007											end.
			15000	O	ZEN	O	C				ORBITS 50° 60° 55°
				2	NADIR.						
135000											HORACE LINK REBOOT
135200											SET UP FOR SST
135309		9	300	2	NADIR						RUN9 start
140235											end.
											error in reboot
											Flight no is A000
											time is incorrect by 1 min 15 sec
											SAFIRE FAST.
0829		10	300	2	NADIR						
85 60											

AFIRE OPERATOR'S LOG

light Number: A503. Operators name: J. CRAWFORD Date: 15 Dec 96 Page 4 of 5

Time (GMT)	Event mark	Run no.	Height	Filter posn.	Mirror posn.	Shutter status up	Shutter status low	Hor link (tick)	Temp diff Ref-BB	Sol Zen	Comments
140735		11	300	2	N	C	O				run11 start
142136											end 11
142224		12	300	2	N	C	O				run12 start
142800						C	C				shutter closed in run.
142933											end
142819		13				C	C				in run
											↓
144705		15	300	2	N	C	C				
144400		15	300	2	N	C	O				SST run 15.
145800						C	C				shutter closed / run.
152030			300	2	N	C	O				open shutter - approaching Discovery
153049		16	100	2	N	C	O				run16 start
153811											end 16
154238		17	300	2	N	C	O				run17 start
155240											end 17.
155657		18	100	2	N	C	O				run 18 start
160341											end 18
160430						C	C				shutter closed.
@											Scan mirror lost with 15 status
											jammed.
											Scan mirror now static.

AFIRE OPERATOR'S LOG

Flight Number: A503 Operators name: J. CRAWFORD Date: 15 DEC 96 Page 5 of 5

Time (GMT)	Event mark	Run no.	Height	Filter posn.	Mirror posn.	Shutter status up	Shutter status low	Hor link (tick)	Temp diff Ref-BB	Sol Zen	Comments
161851											SAFIRE REBOOTED A503-3.FLT.
162430			Nofile	Φ123	HOT	C	C				HOT CAL starts 317/300
163100			Nofile	Φ123	ZENITH						set up for Zenith Cal
163511		19	22000	Φ	ZENITH	O	C				Zenith Cal (fixed filter)
163711				1							
163911				2							
164111				3							
164330				Φ							
164530				1							
164730				2							
164930			220000	3	ZENITH	O	C				~~end Zenith Cal.~~
165130		19									end Zenith cal. Run 19
165230				Φ123	COLD	C	C				COLD CAL 284/301.
165930											end COLD CAL.

P.S.A.P Log

Flight No. A503 Date 15.12.96 Project OMEGA

GMT	Filter Trans.	Flow Rate	$B_a \times 10^{-6}$ Start of Run	Height	Run	$B_a \times 10^{-6}$ End of Run	Remarks
Set to DRS time ✓	New filter Tr = 1.000 ✓	Set to 2.6 lpm	37.0	Levels 39 1 55	Ave = 30 s	48.3	←Preflight ONLY T_r = 0.984
0145	0.998	2.55	0.0	~~~ →			CLIMB AT
1048	0.988	2.62	5.0×10^{-6}	500'			
105113	0.985	2.62	2.2×10^{-6}	300'	1		RUN STARTS
1105	0.978	2.62	2.6×10^{-6}	300'	1		
112431	0.964	~~2.62~~	3.4×10^{-6}	300'	2		RUN STARTS
113457	0.952	2.61	3.9×10^{-6}	300'	3		RUN STARTS
115840	0.941	2.60	0.7×10^{-6}	300'	4		RUN STARTS
120840	0.940	2.6	0.6×10^{-6}	300'	5		RUN STARTS
1219	0.938	2.6	2.2×10^{-6}	300'	5		
123545	0.932	2.6	0.0×10^{-6}	300'	6		RUN STARTS
124538	0.928	~~2.59~~ 2.62	1.1×10^{-6}	300'	7		RUN STARTS
135309	0.921	2.62	0.7×10^{-6}	300'	9		RUN STARTS

GMT	Filter Trans.	Flow Rate	$B_a \times 10^{-6}$ Start of Run	Height	Run	$B_a \times 10^{-6}$ End of Run	Remarks
140738	0.915	2.60	3.7×10^{-6}	300'	11		
1434	0.913	2.60	0.5×10^{-6}	300'			
144705	0.906	2.60	2.4×10^{-6}	300'	15		
1528	0.895	2.61	4.3×10^{-6}	300'			
153049	0.894	2.61	0.3×10^{-6}	100'	16		
154238	0.892	2.58	1.1×10^{-6}	300'	17		
1620	0.887	~~2.61~~ 2.53	3.5×10^{-6}	↗	PROFILE		
163511	0.891	2.63	0	FL220	19		START RUN
1655	0.894	3.04	0.0	↘			SOOT OFF

Met Research Flight

CLOUD PHYSICS LOG

Flight No. A503 Date: 15/12/96 Operator: MP

G.M.T.	PCASP		FSSP			2D-C			HVPS / 2D-P			REMARKS
DRS Time	Conc/cc	Mean R	Conc/cc	Max Size	Reff	Conc/L	Max Size	Habit	Conc/m³	Max Size	Habit	
0947												2D on
101714	.3	0.05				0.15	500	5				Start PI from FL210
101811	1	0.05	5	30		1	500	5				FL200
101917	3	0.05	0.5	30		10	500	5				FL190
102020	7	0.7	0.3	35		15	500	5				FL180
102121	90	0.4	1.6	35		22	500	5				FL170
102222	15	0.4	0.5	35		25	750	5				FL160
102320	14	0.4	0.2	35		5	750	5				FL150
102431	7	0.05										FL140
102537	11	0.07										FL130
102623	5	0.05										FL120
102719	5	0.07										FL110
102815	7	0.07										FL100
102922	16	0.09										FL090
103014	43	0.10										FL080
103115	80	0.09										FL070
103215	85	0.09										FL060
103535	136	0.11										5000'
103735	265	0.10										4000'
103955	370	0.10	0.2	5								3000'
104119	460	0.09	0.2	5								2000'
104321	417	0.09	0.4	5								1000'
104436	470	0.09	1	5								500'
104624	460	0.09	1	5								20' and P
105113												Start Run 1 @ 300'
105800	250	0.10	0.4	5								
105400	960	0.10										
105600	340	0.09	0.9	5								
105800	780	0.08	1.1	5								
110000	325	0.09	0.7	5								
110200	370	0.09	0.2	5								
110400	375	0.09	0.1	5								
110600	365	0.09	0.1	5								
110800	370	0.09										
111000	370	0.09										
111200	358	0.10	0.05	5								

CLOUD PHYSICS LOG

Flight No. A503 Date: 15/12/96 Operator: MP

G.M.T.	PCASP		FSSP			2D-C			HVPS / 2D-P			REMARKS
DRS Time	Conc/cc	Mean R	Conc/cc	Max Size	Reff	Conc/L	Max Size	Habit	Conc/m³	Max Size	Habit	
111400	365	0·10	007	5								
111600	350	0·10	02	5								
111800	375	0·09	0·1	5								
112000	385	009										
112243												end of Run
112431												Start Run 2 @ 300'
112600	375	0·09	0·2	5								
112700	620	0·09	0·07	5								
112900	530	009										
113100	435	0·10										
113302	400	009	0·01	5								
113504												end of Run
113657												Start Run 3 @ 300'
113800	435	009										
113700	530	009										
113900	340	009										
114100	313	0·07	0·1	5								
114300	275	009	0·05	5								
114500	300	0·09	0·2	5								
114700	210	0·10	0·2	5								
114900	340	007	0·5	5								
115100	430	0·08	0·1	5								
115300	465	0·08	0·3	5								
115500	404	0·09	05	5								
115700												end of Run
115740												Start Run 4 @ 300'
115900	109	0·10	0·2	5								
120100	90	0 11										
120300	95	0·10	0·6	5								
120500	96	0·09	0·1	5								
120700	85	0 10	0·2	5								
120749												end of Run
120857												Start Run 5 @ 300'
120900	90	0·10	0·4	5								
121100	87	0·10	0·2	5								
121300	50	0·10	0·4	5								

CLOUD PHYSICS LOG

Flight No. A503 Date: 15/12/96 Operator: MP

G.M.T.	PCASP		FSSP			2D-C			HVPS / 2D-P			
DRS Time	Conc/cc	Mean R	Conc/cc	Max Size	Reff	Conc/L	Max Size	Habit	Conc/m^3	Max Size	Habit	REMARKS
121500	55	0·11	0·7	5								
121700	120	0·10	0·7	5								
121800	2900	0·07	1·1	5								Ship Track
121900	505	0·08	1·6	10								
122047	9000	0·07	1·1	10								Ship Track
122100	340	0·09	0·1	5								
122300	240	0·09	0·2	5								
122500	240	0·09										
122700	260	0·09										
122900	255	0·09	0·02	5								
123100	315	0·09	0·2	5								
123300	540	0·08										
123405												Circle & Run
123545												Start Run 6 @ 300'
123600	260	0·09										
123500	330	0·09	0·06	5								
124100	310	0·09	0·04	5								
124200	250	0·09	0·2	5								
124422												Circle & Run
124535												Start Run 7 @ 300'
124600	340	0·09	0·9	5								
124800	430	0·08	0·9	5								
125100	340	0·09	0·8	5								
125300	390	0·09										
125400	170	0·09	0·4	5								
125600	100	0·09	0·3	5								
125800	110	0·09										
130000	85	0·09										
130200	84	0·11	0·4	10		3	300	1				
130309												Circle & Run
130616	70	0·10										Start Run from 50'
130754	110	0·09	0·02	5								1000'
130925	37	0·09	0·02	5								2000'
131104	35	0·11	0·1	5								3000'
131214	5	0·09	0·02	5								4000'
131404	14	0·05										5000'

CLOUD PHYSICS LOG

Flight No. AS 03 Date: 15/12/96 Operator: MP

G.M.T.	PCASP		FSSP			2D-C			HVPS / 2D-P			
DRS Time	Conc/cc	Mean R	Conc/cc	Max Size	Reff	Conc/L	Max Size	Habit	Conc/m³	Max Size	Habit	REMARKS
131519	67	0.08	0.01	5		3	200					6000'
131626	120	0.2	4	45		530	370	1				7000'
131725	6	0.3	1.6	40		30	600	1				8000'
131833	60	0.2	0.1	5		5	600	5				9000'
131940	05	0.1	1.2	25		100	225	11/2				FL100
132045	30	0.3	4	35		30	100	11				FL110
132136	60	0.3	15	30		2	75	11				FL120
132236	4	0.07										FL130
132332	3	0.07										FL140
132430	3	0.07										FL150
132544												Start Run 5.1 FL150
132700	5	0.07										
133100	2	0.07										
133300	3	0.06										
133443												end & Run
133605												Start Run 5.2 @ FL150
133800	1	0.07										
133500	10	0.07										
134005												end & Run
134140												Start pokes
134304												end & calibs
135400	70	0.10	0.2	5								Start Run 9 @ 300'
135800	80	0.10	0.4	5								
135800	149	0.10	0.6	5								
140000	210	0.12	0.9	25		5	800	1				
140112												end & Run
140201												Start Run 10 @ 300'
140300	360	0.10	0.4	10		6	475	1				
140500	350	0.09	0.4	5		5	800	1				
140700												end & Run
140745												Start Run 11 @ 300
140500	1100	0.07	0.7	5								
141000	1370	0.08	0.7	5								
141200	2 10	0.09										
141400	115	0.10	0.2	5								
141600	90	0.12	0.07	5								

CLOUD PHYSICS LOG

Flight No. A503 Date: 15/12/96 Operator: MP Page 4 of 7

G.M.T.	PCASP		FSSP			2D-C			HVPS / 2D-P			
DRS Time	Conc/cc	Mean R	Conc/cc	Max Size	Reff	Conc/L	Max Size	Habit	Conc/m³	Max Size	Habit	REMARKS
141500	70	0·14	0·6	20		0·5	600	1				
142000	50	0·13	0·2	15		1	650	1				
142140												end of Run
142226												Start Run 12 @ 300
142300	105	0·17	0·6	25		6	800	1				
142400	450	0·19	0·9	35		17	725	1				
142700	390	0·31	3	30		50	500	1				
142725												end of Run
142821												Start Run 13 @ 300'
142900	240	0·3	3·9	35		35	800	1				
143100	305	0·3	5	40		89	700	1				
143300	210	0·2	6	35		47	725	1				
143500	280	0·1	9	35		9	800	1				
143700	700	0·12	2	45		40	800	1				
143817												end of Run
143926												Start Run 14 @ 300'
144000	510	0·18	2	25		10	800	1				
144200	430	0·09	1	25		3	800	1				
144600	540	0·10	2	35		11	800	1				
146009												end of Run
146105												Start Run 15 @ 300'
144800	250	0·10	0·4	25		0·5	700	1				
145000	1000	0·09	1·1	25		2	800	1				
145800	926	0·13	0·9	20		4	600	1				
145900	240	0·21	1·6	30		15	700	1				
												Gap in Notes due to Run
												Mentioning Air could in Vdat
153047												Start Run 16 @ 100'
153100	805	0·09	0·4	15								
153300	140	0·12	0·9	25		3	600	1				
153500	220	0·11	1·7	20		11	400	1				
153700	105	0·2	2	30		7	500	1				
153815												end of Run
154238												Start Run 17 @ 300'
154300	140	0·2	3	30		8	450	1				
154500	180	0·3	1	30		9	800	1				

CLOUD PHYSICS LOG

Flight No. A503 Date: 15/12/96 Operator: MT Page 6 of 7

G.M.T.	PCASP		FSSP			2D-C			HVPS / 2D-P			REMARKS
DRS Time	Conc/cc	Mean R	Conc/cc	Max Size	Reff	Conc/L	Max Size	Habit	Conc/m³	Max Size	Habit	
154100	150	0·12	1·1	45		3	250	1				
154800	150	0·11	0·6	15		2	800	1				
155300	225	0·10	0·5	15		2	800	1				
155246												end Run
155647												Start Run 15
155700	400	0·11	0·4	25		3	800	1				
155900	285	0·11	1	25		15	700	1				
160100	210	0·14	2	25		35	300	1				
160300	235	0·17	3	30		15	700	1				
160345												end of Run
160441	120	0·13	2	30		18	500	1				Start P from 50'
161125	340	0·21	3	35		85	700	1				
161251	217	0·2	0·9	30		15	450	1				2000'
161441	90	0·2	0·4	30		10	800	1				3000'
161624	30	0·17	0·1	25		4	500	1				4000'
161757	70	0·10	0·2	20		5	500	1				5000'
161981	55	0·18	0·9	30		11	700	1				6000'
162036	55	0·22	7	35		260	800	1				FL70
162140	100	0·6	6	35		380	800	6				FL80
162225	50	0·6	4	35		240	800	6				FL90
162519	75	0·6	4	35		200	800	6				FL100
162616	40	0·7	2	35		60	800	6				FL110
163506	5	0·6	1	35		90	800	6				FL120
162600	5	0·7	2	45		70	725	6				FL130
162651	40	0·7	2	35		40	800	6				FL140
162800	15	0·7	3	35		60	800	6				FL150
162845	33	0·8	3	35		55	800	6				FL160
162940	15	0·8	4	40		56	800	6				FL170
163046	8	0·5	0·2	25		7	800	6				FL180
163145	4	0·1										FL190
163302	7	0·09										FL200
163357	6	0·08										FL210
163511												FL220 end & P. Start Run
163600	6	0·07										
163820	7	0·08										
164000	10	0·10										

CLOUD PHYSICS LOG

Flight No. A503 Date: 5/12/96 Operator: MP Page 7 of 7

G.M.T.	PCASP		FSSP			2D-C			HVPS / 2D-P			REMARKS
DRS Time	Conc/cc	Mean R	Conc/cc	Max Size	Reff	Conc/L	Max Size	Habit	Conc/m^3	Max Size	Habit	
16:42:00	11	0.05										
16:44:00	10	0.05										
16:46:00	10	0.05										
16:48:00	6	0.09										
16:50:00	8	0.05										
16:52:00	5	0.09										
16:54:00	7	0.05										
16:55:05												end of Run

DATE A503 TI MRF 1013.8. 1CC/015 BOX LAKES

NAV EXH

AIRFIELD

R/W 20 W/V CALM TEMP 17 QNH 1013 QFE

WX

ATC CL L ALC 7360 ↑ 120 ↑ 124.75 123.7

T/O TIME 0937

AIRFIELD

R/W 08 W/V 08 TEMP QNH 1013 QFE

WX Fwa

ATC CL → 4000

LAND TIME 1110.

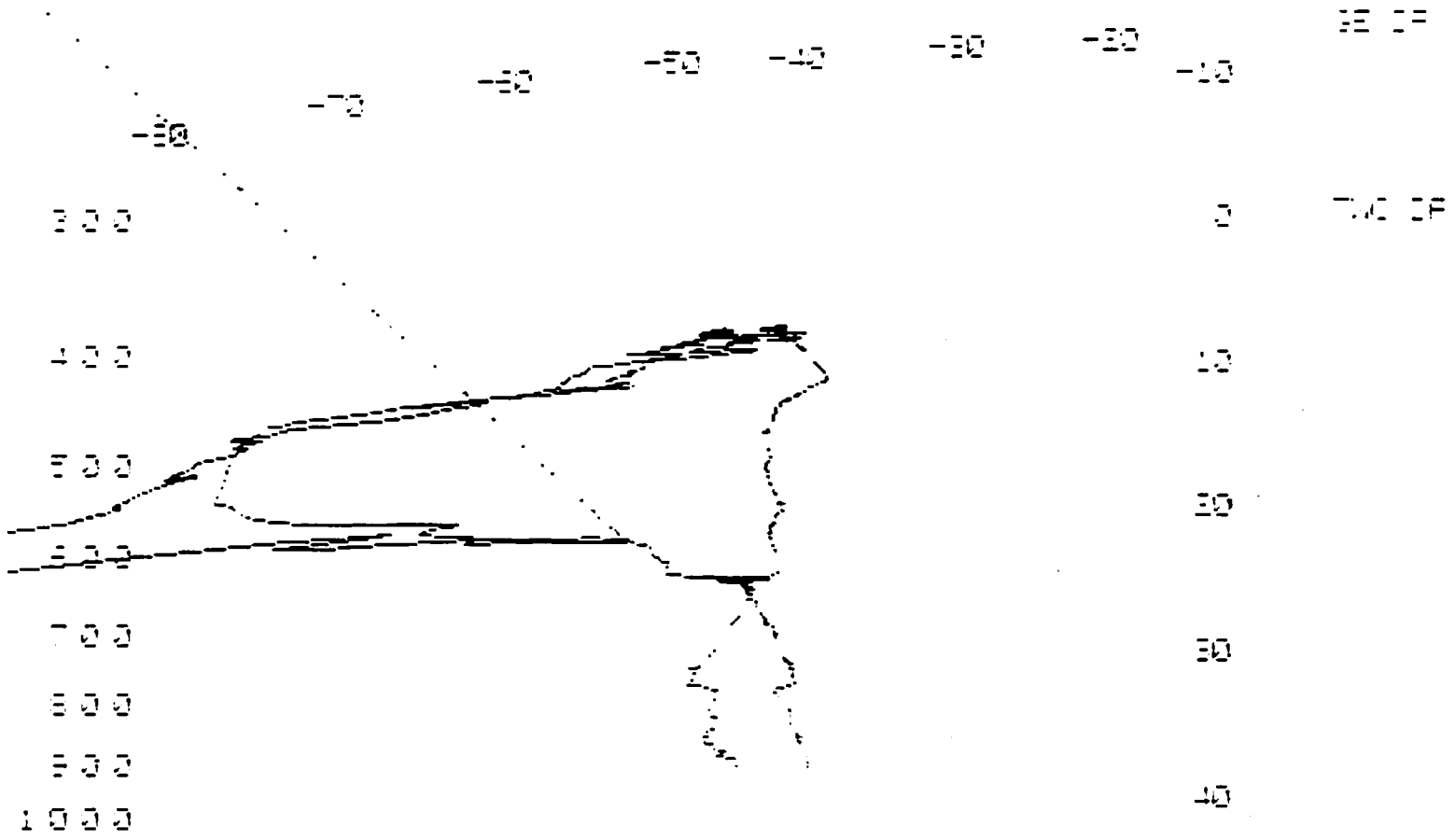
TIME	HDG	DR	G/S	IAS	TAS	W/V	ALT/FL	QNH/PR	LAT/LONG	RUN
1017 20	054	25	280	185	250	270/5	FL40		N36524 W0112	R1
32 19							F60		N37292 E00525	—
33 42							↘		N37277E00541	
56 23							50'		N36536E00473	—
1051 R	32	25	181	178	180	198/14	300'		N36436 E00491	R1
1122 44									N38010 E00258	—
24 31	198	191	25	182	18[illegible]	[illegible]55/8	300		N35581 W00297	R2
34 14									N37288 W00405	—
34 57	141	25	184	176	180	012/06	300		N37261 E00395	R3
51 20									N36328 E00137	—
58 44	241	071	15	151	183	235/12	320		N36297 E00101	R4
1207 51									N36155 W00175	—
08 44	324	325	35	180	185	205/10	300		N36176 W00206	R5
34 05									N37195 W00185	—
35 45	216	186	[illegible]	177	180	054/7	300		N37175 W00123.3	R6
44 24									N36555 W01443	—
46 53	141	0	180	180	184	CALM	300		N36694 W01402	R7
1303 29									N36698 W01037	—
06 13							50'		N36095 W01120	R2
24 31									N36251 W0249	—
1325 46	123	?	266	180	220	267/4	150		N36187 W02083	R8.1
33 53									N38080W01471	—
35 04	277	15	193	182	235	272/9	150		N36041 W01460	R8.2
									N36069 W02048	—

DISK PROFORMA/NAVFORM

TIME	HDG	DR	G/S	IAS	TAS	W/V	ALT/FL	QNH/PR	LAT / LONG	RUN
46[49]	022								N 36098 W02066	01
	080									02
	120									~~03~~.
53[09]	028	IF	191	182	185	168/00	300		N 36159 W01307	R9.
56[16]									N 37376 W01161	—
02[02]	267			180	182	262/02	300		N 36396 W01177	R10
07[00]									N 36390 W01367	—
07[31]	208	IF	178	182	185	243/06	300		N 36377 W01384	R11
21[36]									N 36006 W02027	—
22[31]	268	IS	189	180	185	024/06	300		N 35592 W02052	R12
27[33]									N 35587 W02247	—
28[19]	022	IF	183	180	185	078/07	300		N 36005 W02259	R13
38[18]									N 36274 W02077	—
39[24]	266	IF	181	180	180	347/06	300		N 36295 W02093	R14
46[11]									N 36352 W02377	—
47[05]	206	D	185	180	182	333/3	300		N 36346 W02338	R15
50[20]									N 35515 W03001	—
30[49]	138	IF	185	180	183	273/8	1000		N 36261 W01490	R16
38[11]									N 36076 W01327.	~~R~~
42[36]	341	IF	181	180	181	082/07	300		N 36016 W01311	R17
52[40]									N 36298 W01448.	—
56[57]	153	D	191	181	185	239/4	100		N 36313 W01476	R18
60[34]									N 36117 W01576	—
09[39]	024	D	181	181	188	088/9	50		N 36099 W01374	F3.
35[11]	008	IF	211	180	255	273/37	F220		N 37345 W00561	R19
55[05]									N 38584 W00341	—

A503 15-DEC-96 10:07:09 007 -- 37.63 -0.20 AS P

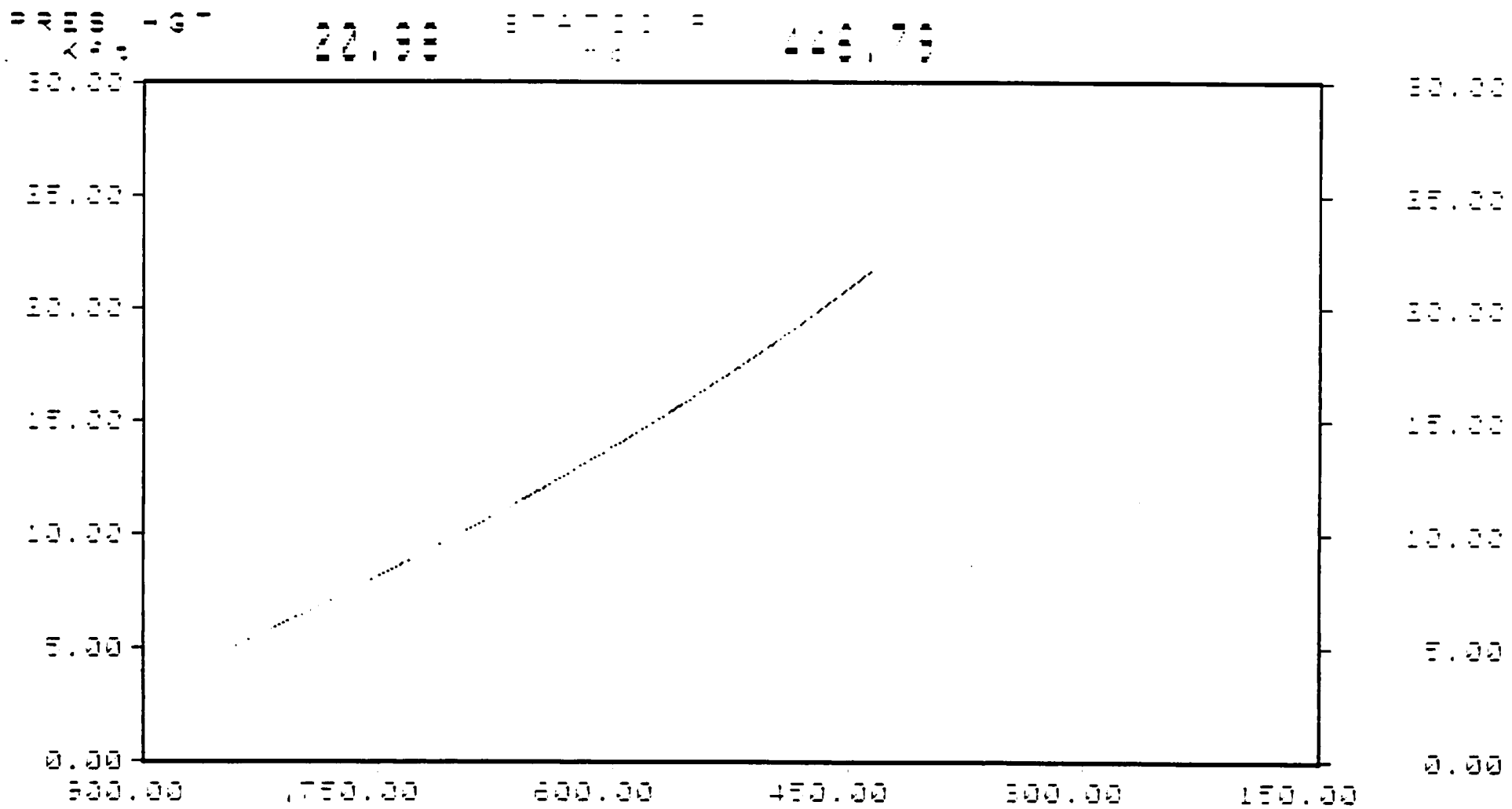
198.	447.	21.0	298.	-22.1	-21.6	277/30



A SELECT	B PARAS	C FREQ	D ZOOM	E	F	G VIDEO	H HELP

A503 15-DEC-96 10:10:12 007 37.38 -0.23 AS P

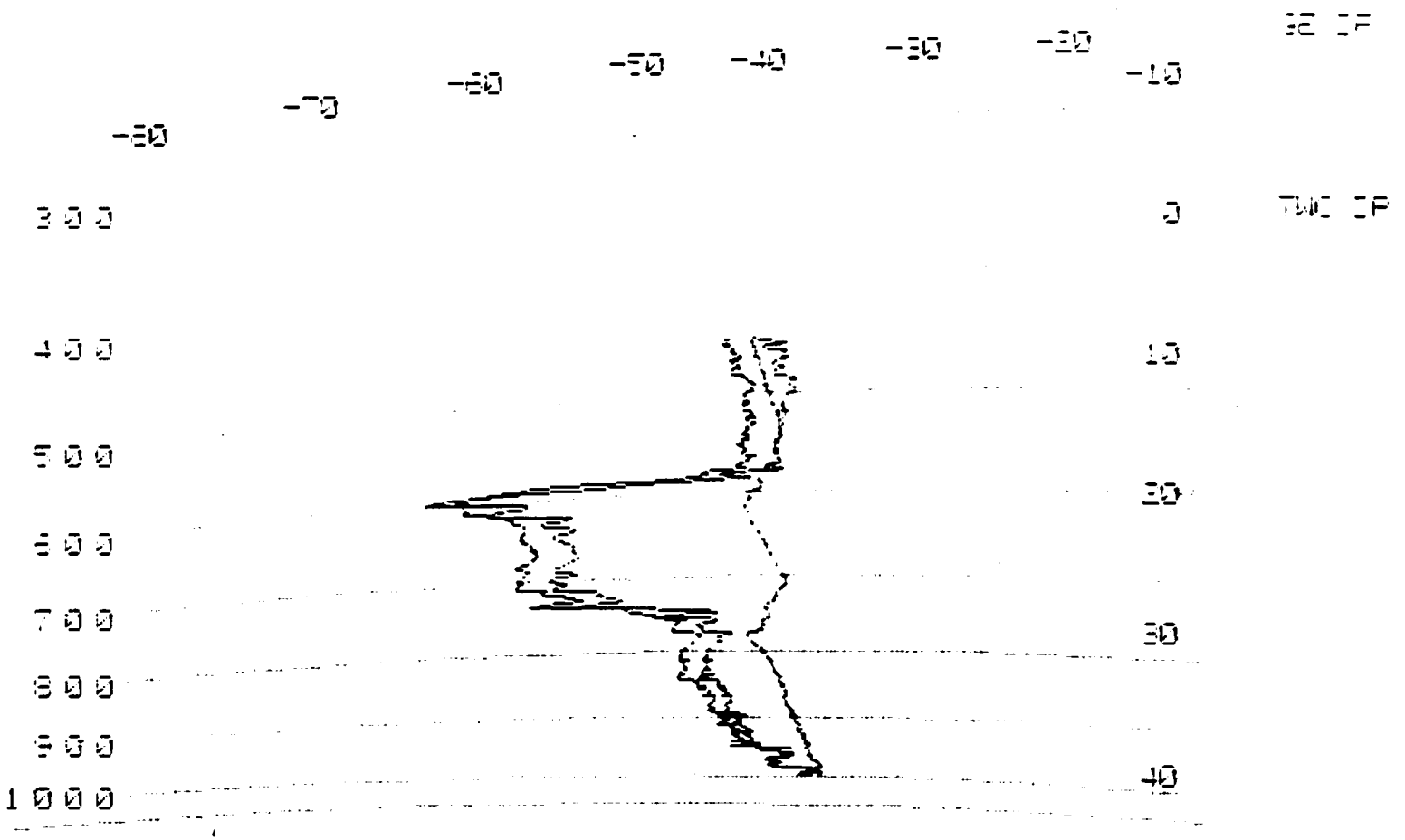
197.	447.	21.0	302.	-22.1	-21.5	275/33



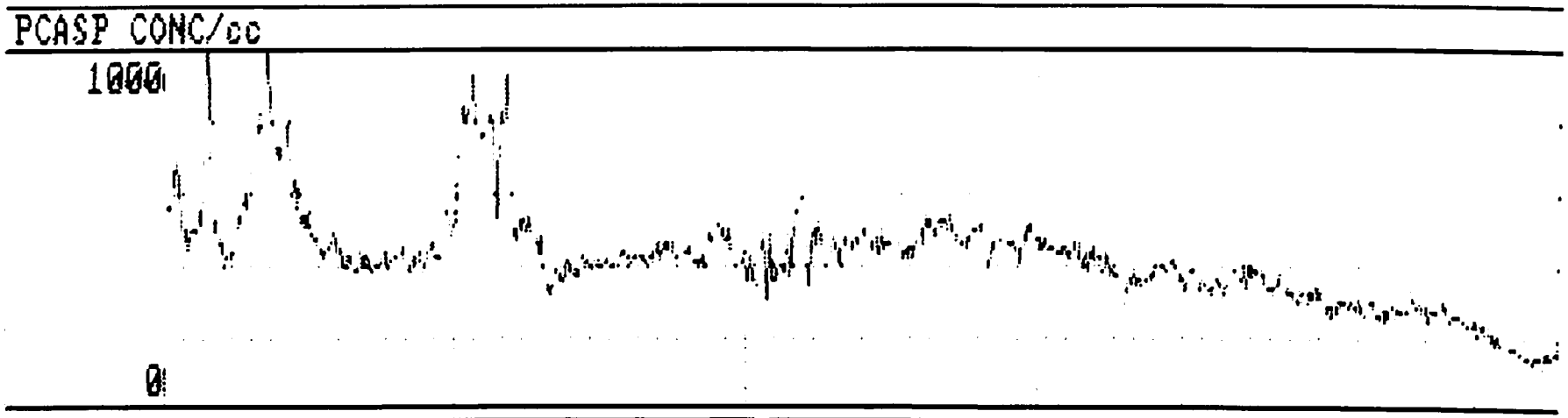
A	B	C	D	E	F	G	H
SELECT	PARAS	FREQ	ZOOM			VIDEO	HELP

A503 15-DEC-96 10:44:48 010 -- 36.97 0.77 AS P

DIR deg	SPD m/s	GUST kts	T C	DEW C	WIND deg m/s
175.	995.	0.5	187.	14.5	12.8 257/ 2

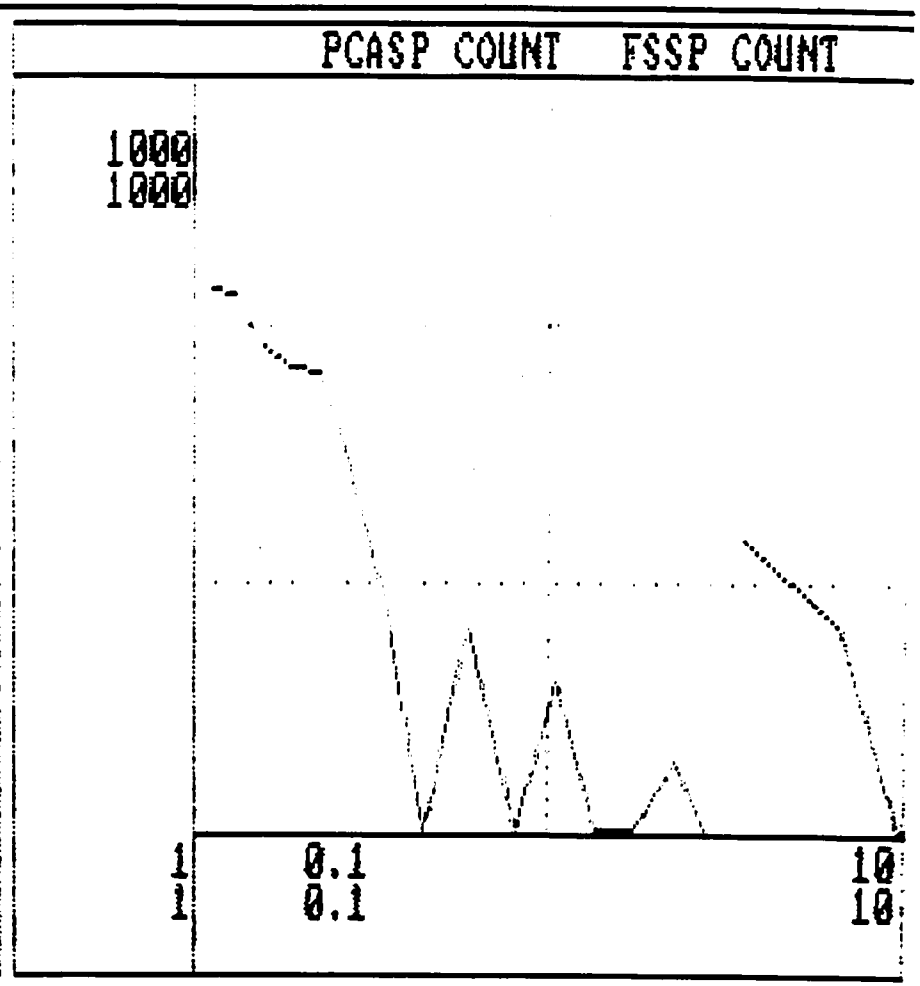


A SELECT	B PARAS	C FREQ	D ZOOM	E	F	G VIDEO	H HELP



PCASP CONC	#/cc	559
PCASP MEAN RAD	um	0.1
PCASP MASS	ug/m3	15.73
FSSP CONC	#/cc	1
FSSP MEAN RAD	u	2.5
FSSP LWC	gm/m3	0.00
2D-C CONC	#/l	0.0
2D-C MAX SIZE	um	0
2D-C LWC	g/m3	0.000e+000

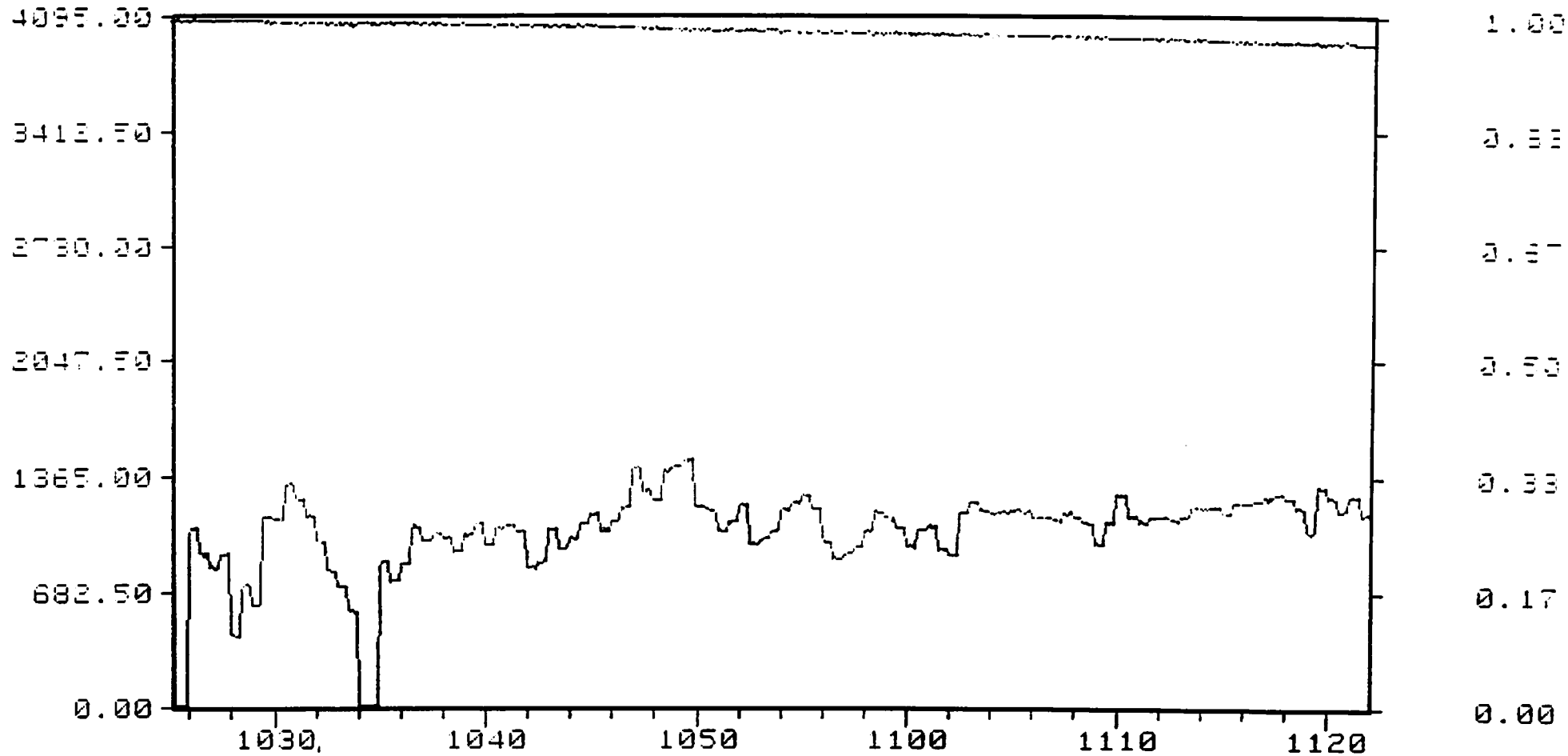
96-12-15 10:46:27



A503 15-DEC-96 11:21:48 013 37.98 -0.39 FC P

[illegible] deg	[illegible] mb	[illegible] kts	[illegible] kts	[illegible] C	[illegible] C	WIND deg m/s
317.	1004.	0.2	180.	14.6	9.7	064/ 6

PSAP LOG 1148.00 PSAP TRA 0.96

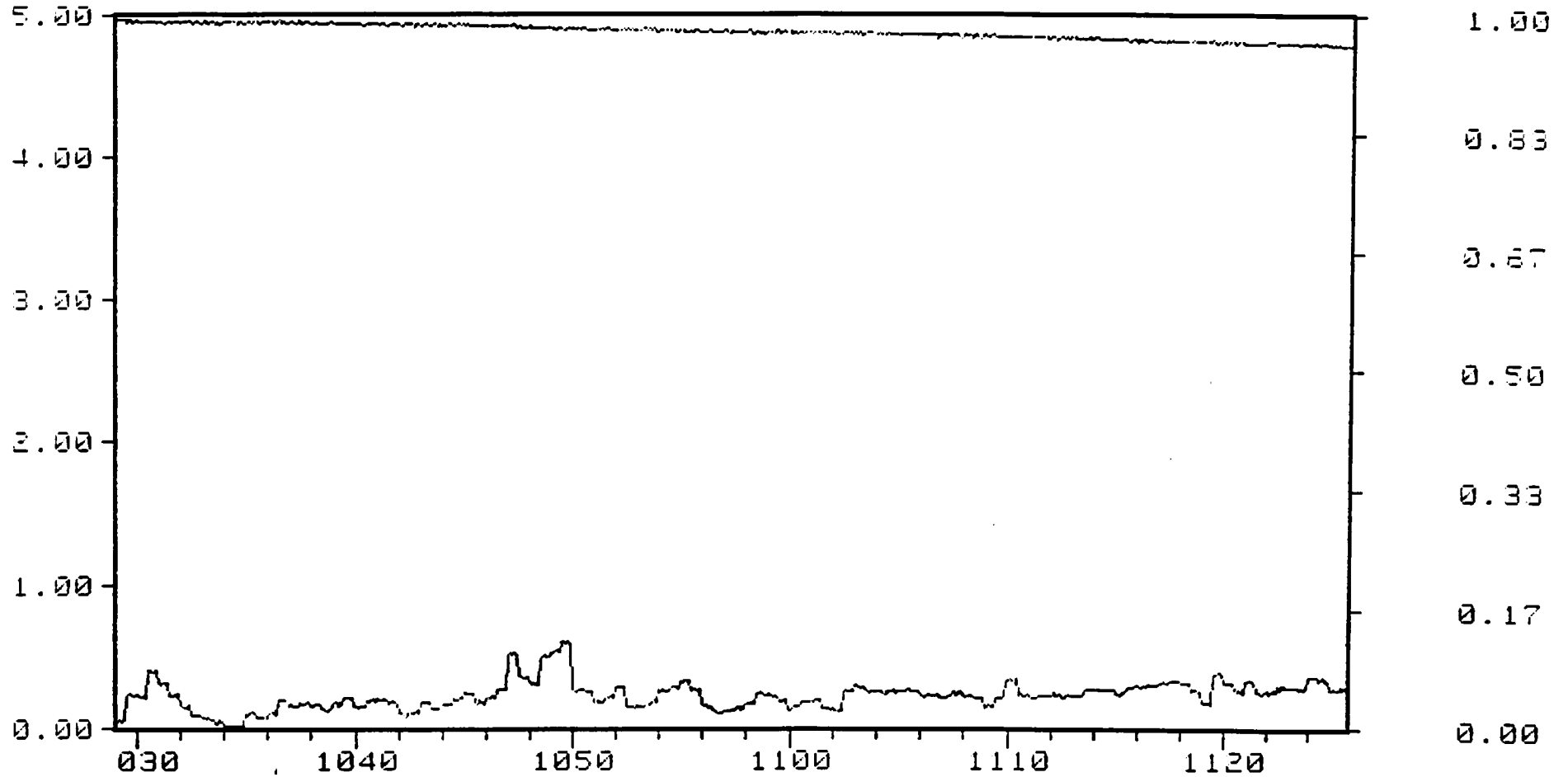


POWER UP CHECK -- OK : K/B 01899/A3.02

A503 15-DEC-96 11:25:45 016 Ω 37.90 -0.51 FC P

HDG deaT	SPR mb	PHGT kft	TAS knots	TAT C	DEW C	WIND deg m/s
195.	1003.	0.3	187.	14.7	10.2	346/ 2

PSAP LIN E-5m-1 0.29 PSAP TRA 0.96

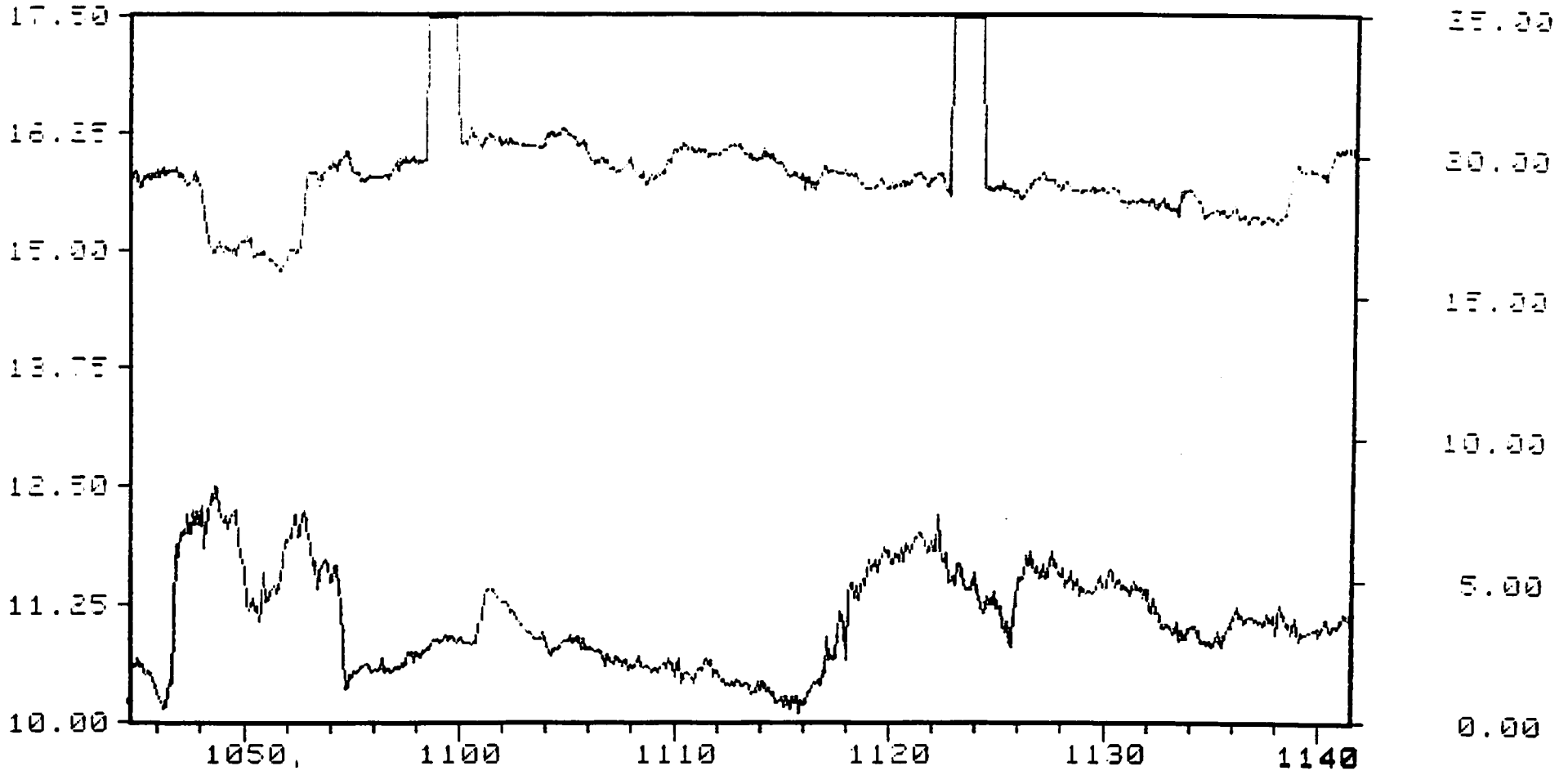


POWER UP CHECK -- OK : K/B 01899/A3.02

A503 15-DEC-96 11:41:30 018 [illegible] 37.17 -0.42 FC P

HDG deg	SFF mb	PHGT kft	TAS knots	TAT C	DEW C	WIND deg m/s
141.	1004.	0.3	184.	15.1	10.6	021/ 4

S.TEMP C 16.00 ENV WS m s-1 3.60

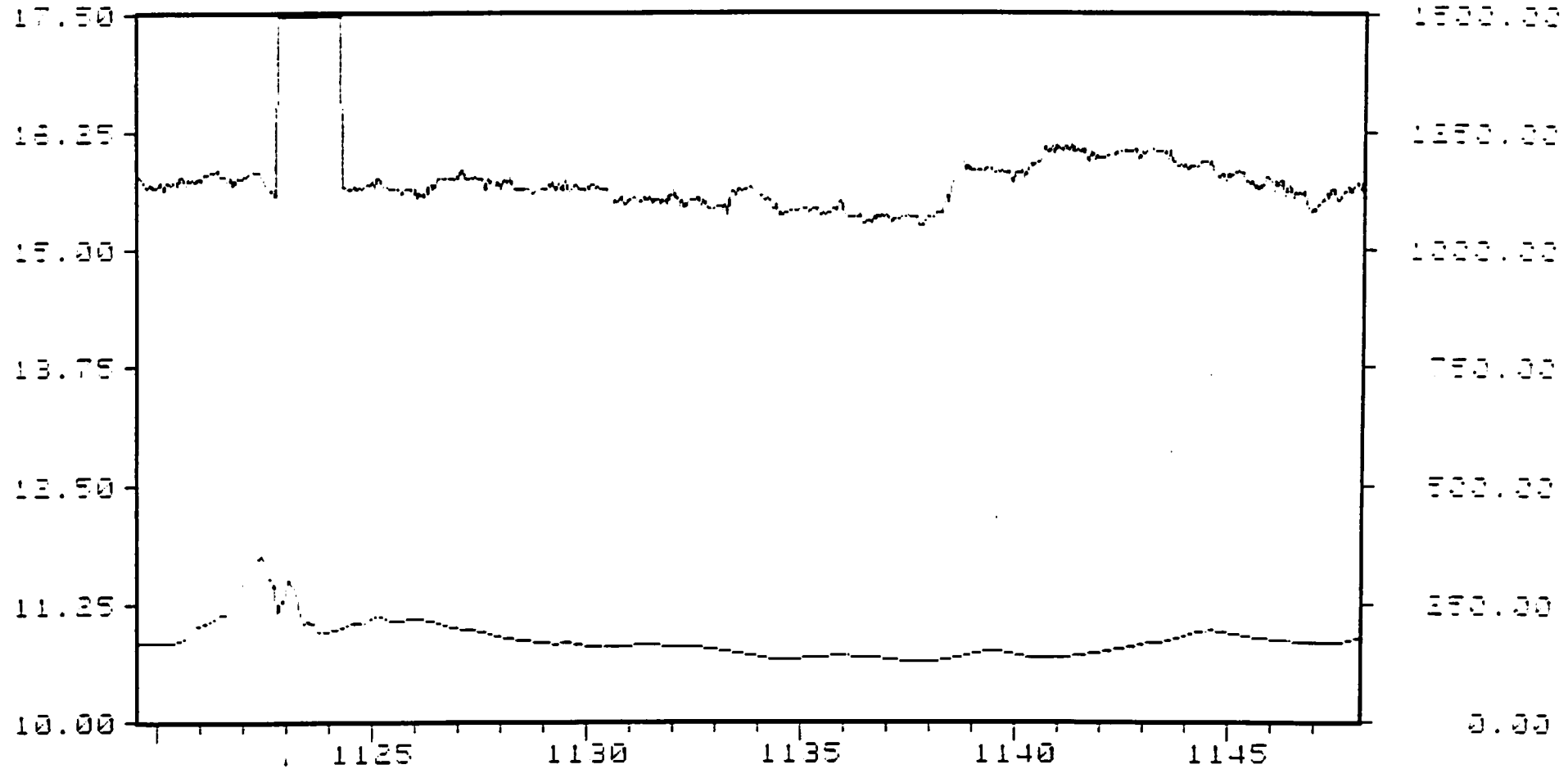


POWER UP CHECK -- OK : K/B 01899/A3.02

A503 15-DEC-96 11:47:51 018 36.92 -0.16 AS P

						WIND
						deg m/s
136.	1004.	0.2	181.	15.1	12.8	161/ 1

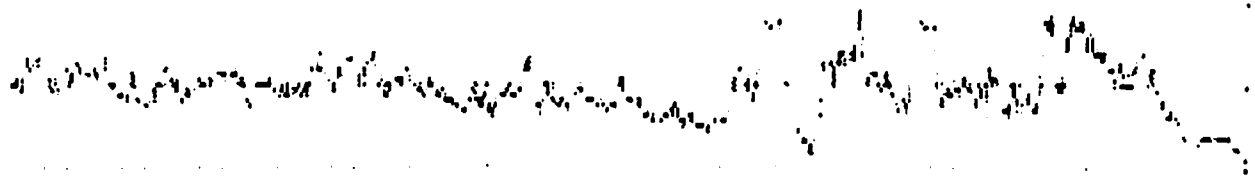
S.TEMP 15.62 175.82
C C



A	B	C	D	E	F	G	H
SELECT	PARAS	FREQ	ZOOM			VIDEO	HELP

PCASP CONC/cc

1000



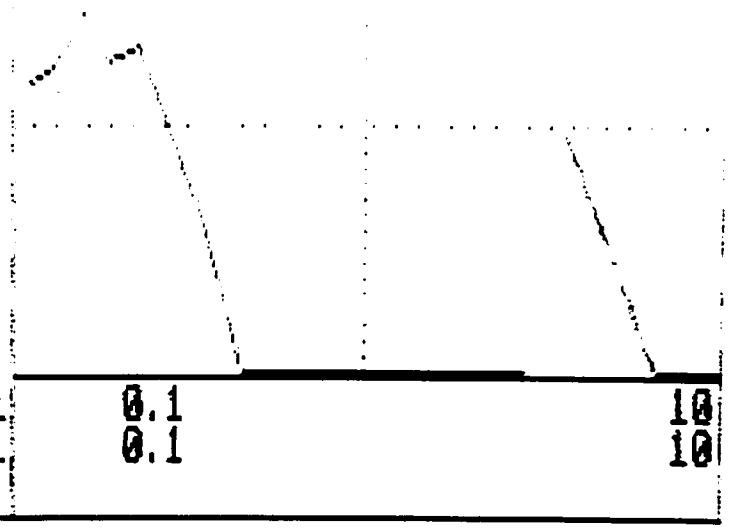
0

PCASP CONC	#/cc	92
PCASP MEAN RAD	um	0.1
PCASP MASS	ug/m3	0.71
FSSP CONC	#/cc	0
FSSP MEAN RAD	u	2.0
FSSP LWC	gm/m3	0.00
2D-C CONC	#/l	0.0
2D-C MAX SIZE	um	0
2D-C LWC g/m3		0.000e+000

96-12-15 12:00:33

PCASP COUNT FSSP COUNT

1000
1000

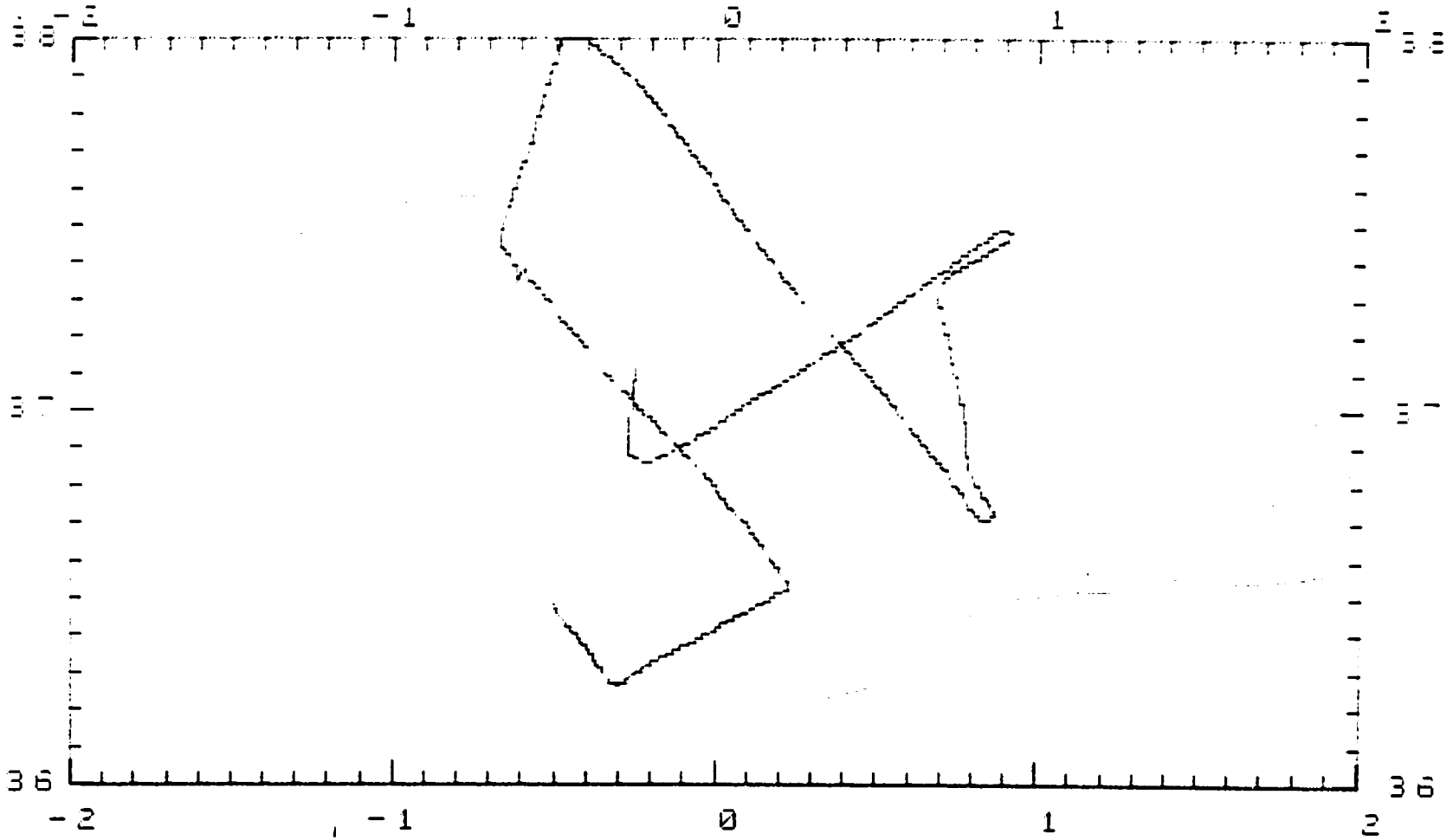


1 0.1 10
1 0.1 10

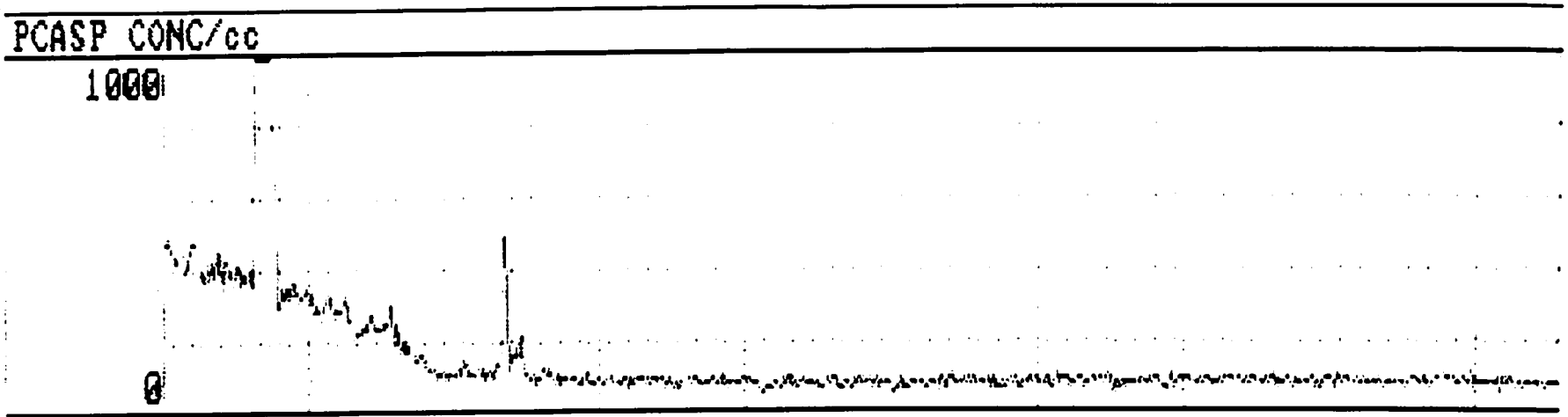
POWER UP CHECK -- OK : K/U 01000203.02

A503 15-DEC-96 12:13:30 023 -- 36.49 -0.54 AS P

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
deg	m	kts	knots	C	C	deg m/s
321.	1004.	0.3	186.	14.9	13.5	230/ 4

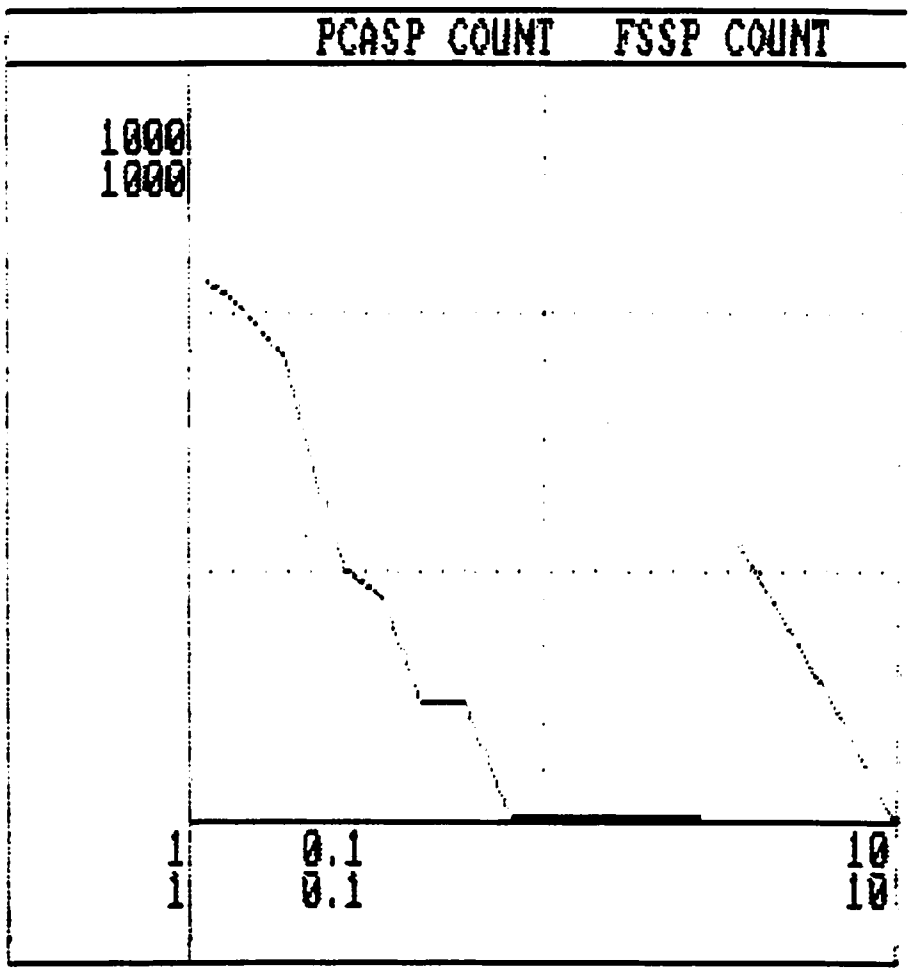


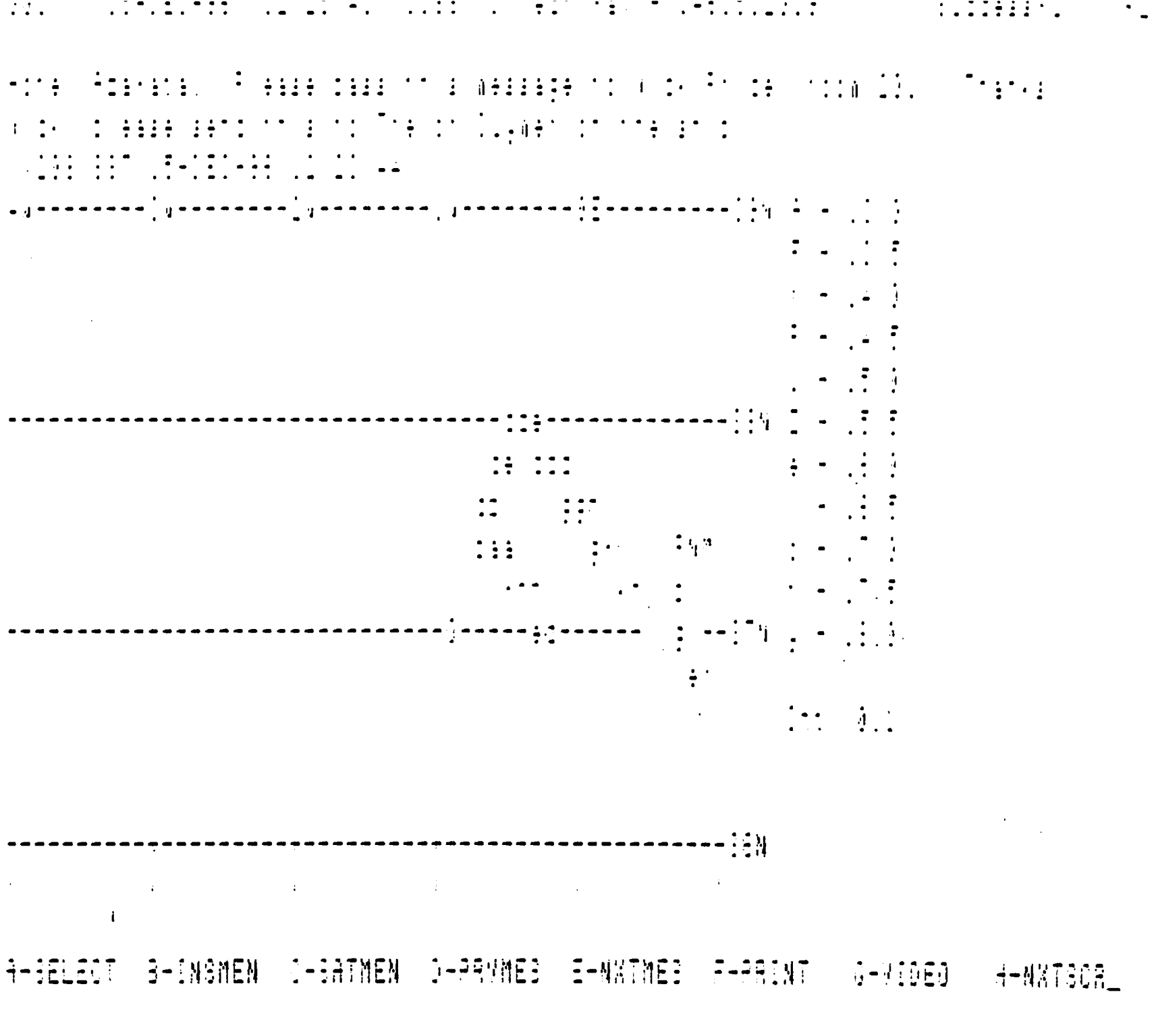
A SELECT	B DEVICE	C FREQ	D ZOOM	E	F	G VIDEO	H HELP



PCASP CONC	#/cc	485
PCASP MEAN RAD	um	0.1
PCASP MASS	ug/m3	5.30
FSSP CONC	#/cc	2
FSSP MEAN RAD	u	2.4
FSSP LWC	gm/m3	0.00
2D-C CONC	#/l	0.0
2D-C MAX SIZE	um	0
2D-C LWC g/m3		0.000e+000

96-12-15 12:18:48





F4-SELECT F3-INSMEN F2-CATMEN F1-PRVMES F5-NXTMES F6-PRINT F7-VIDEO F8-NXTSCR_

A503 15-DEC-96 13:05:24 031 -- 36.15 -1.20 AS P

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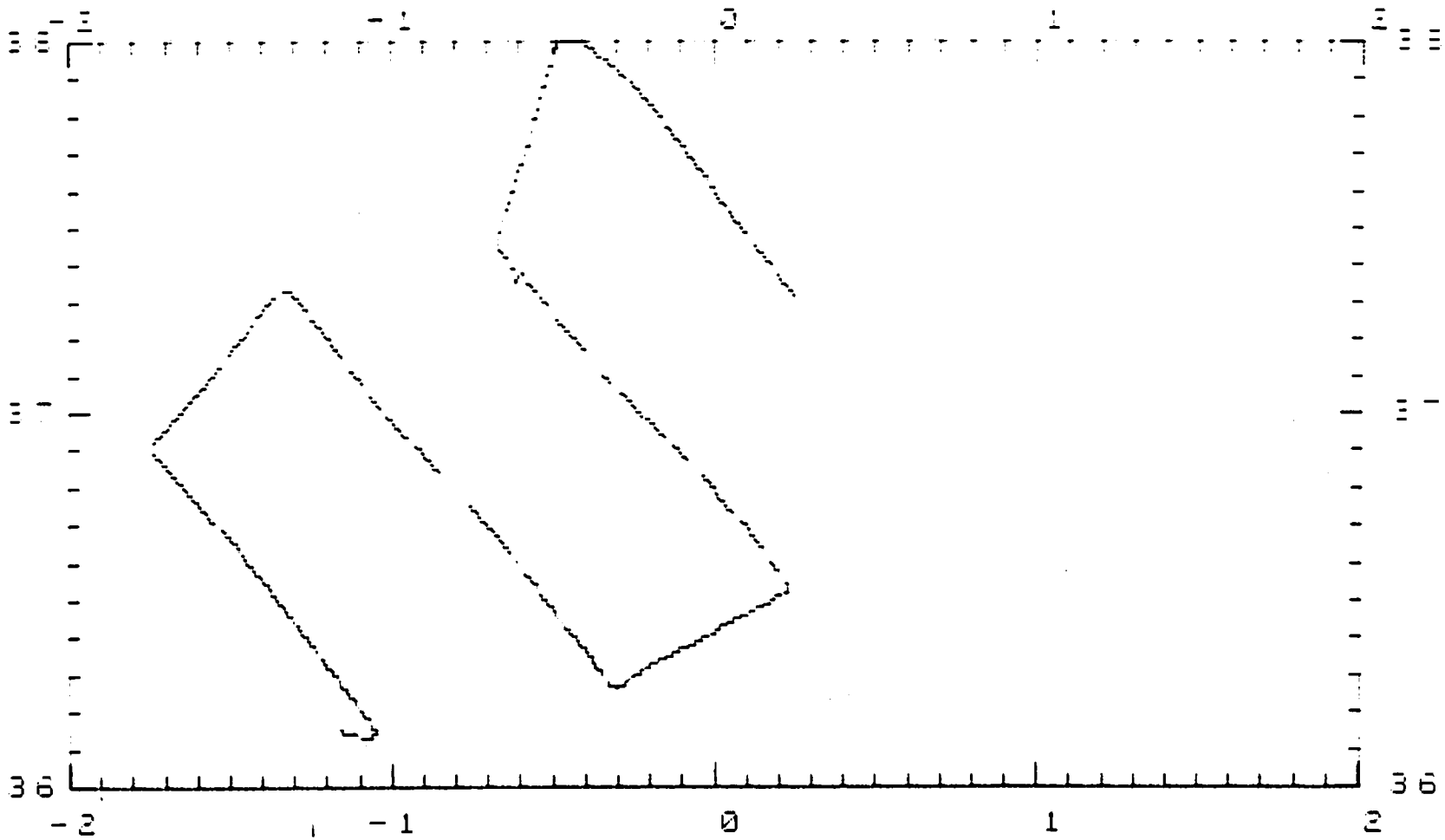
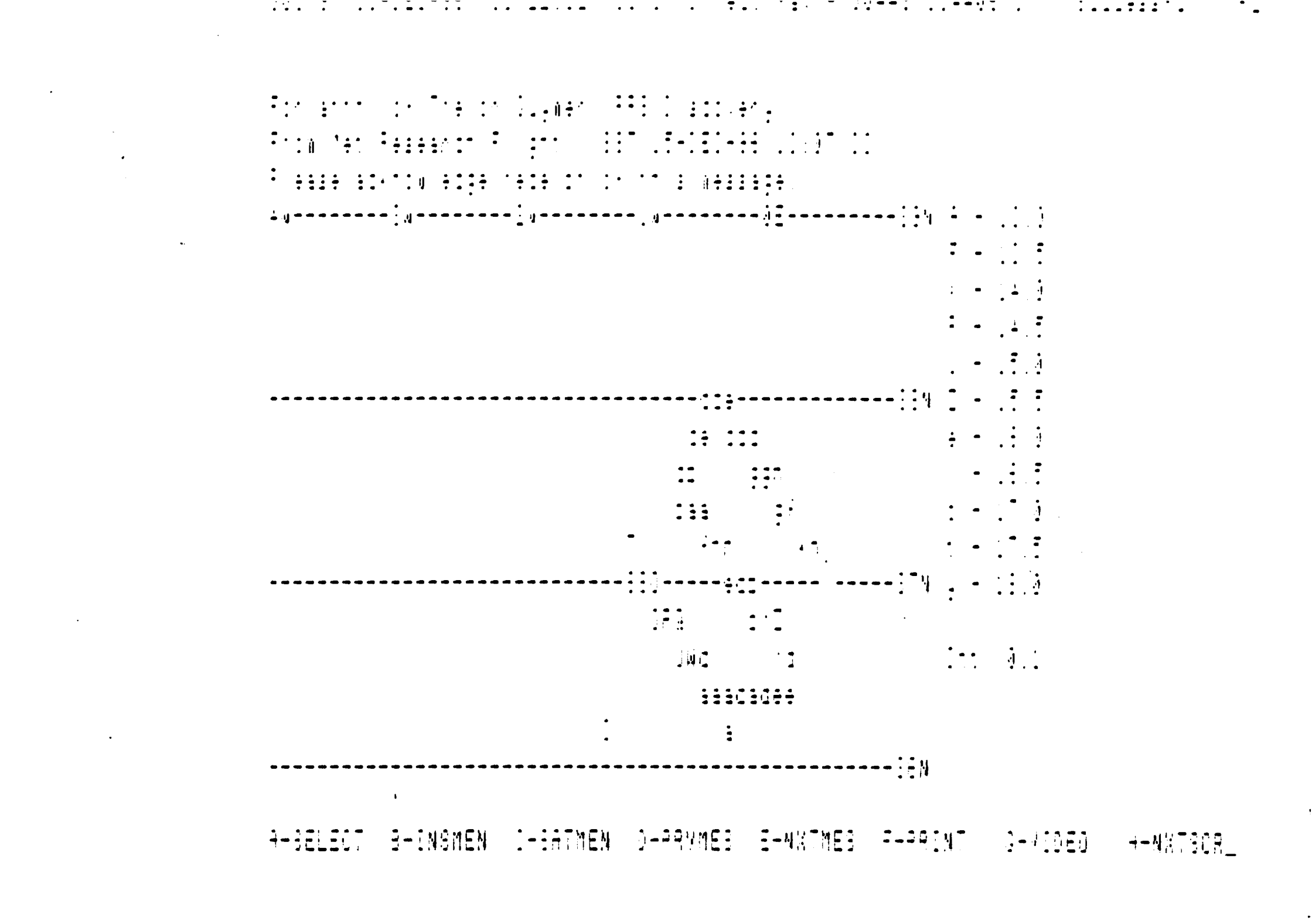
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
281.	1007.	0.2	185.	14.5	: 12.6	215/ 2

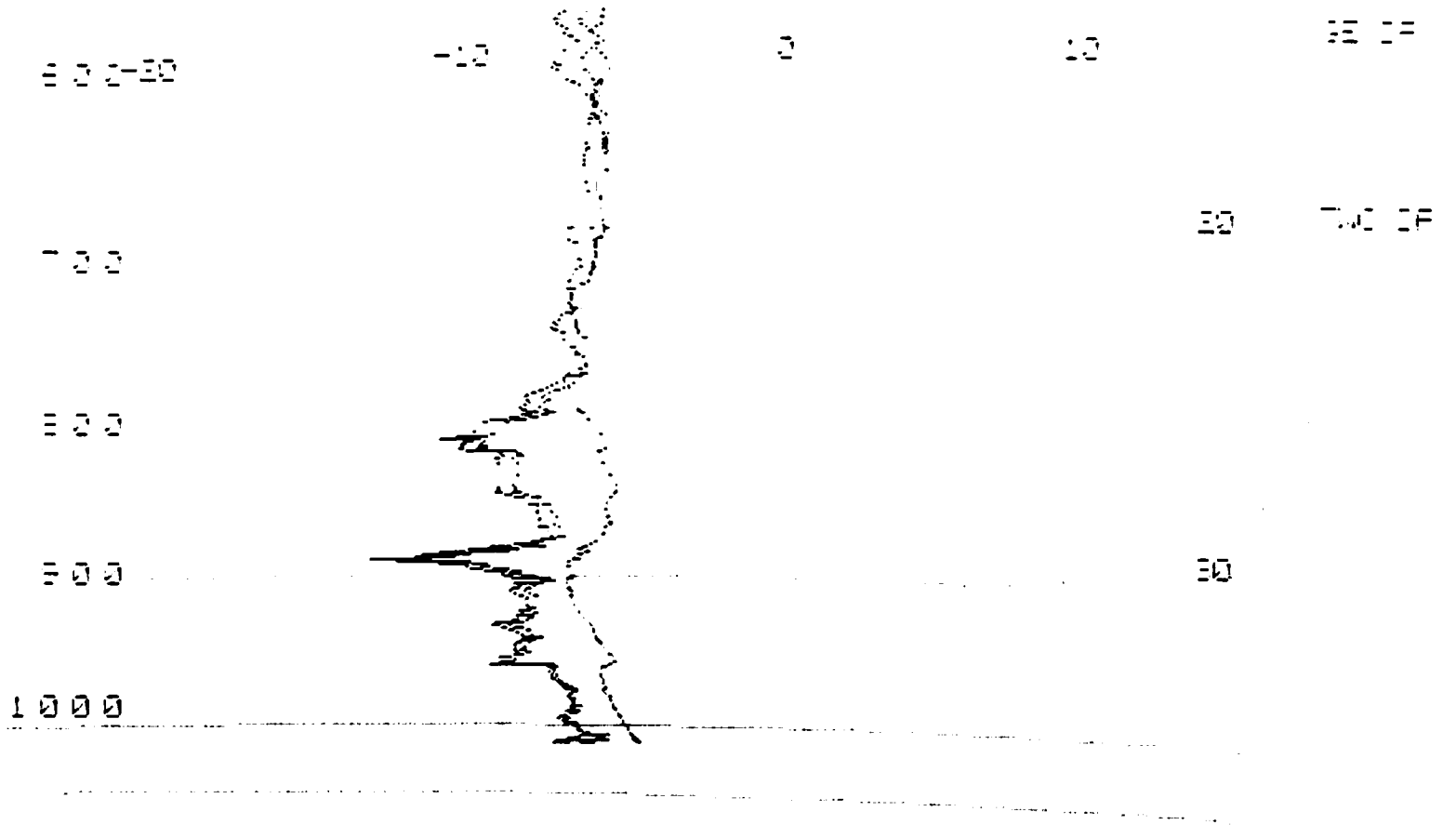


A SELECT	B DEVICE	C FREQ	D ZOOM	E	F	G VIDEO	H HELP



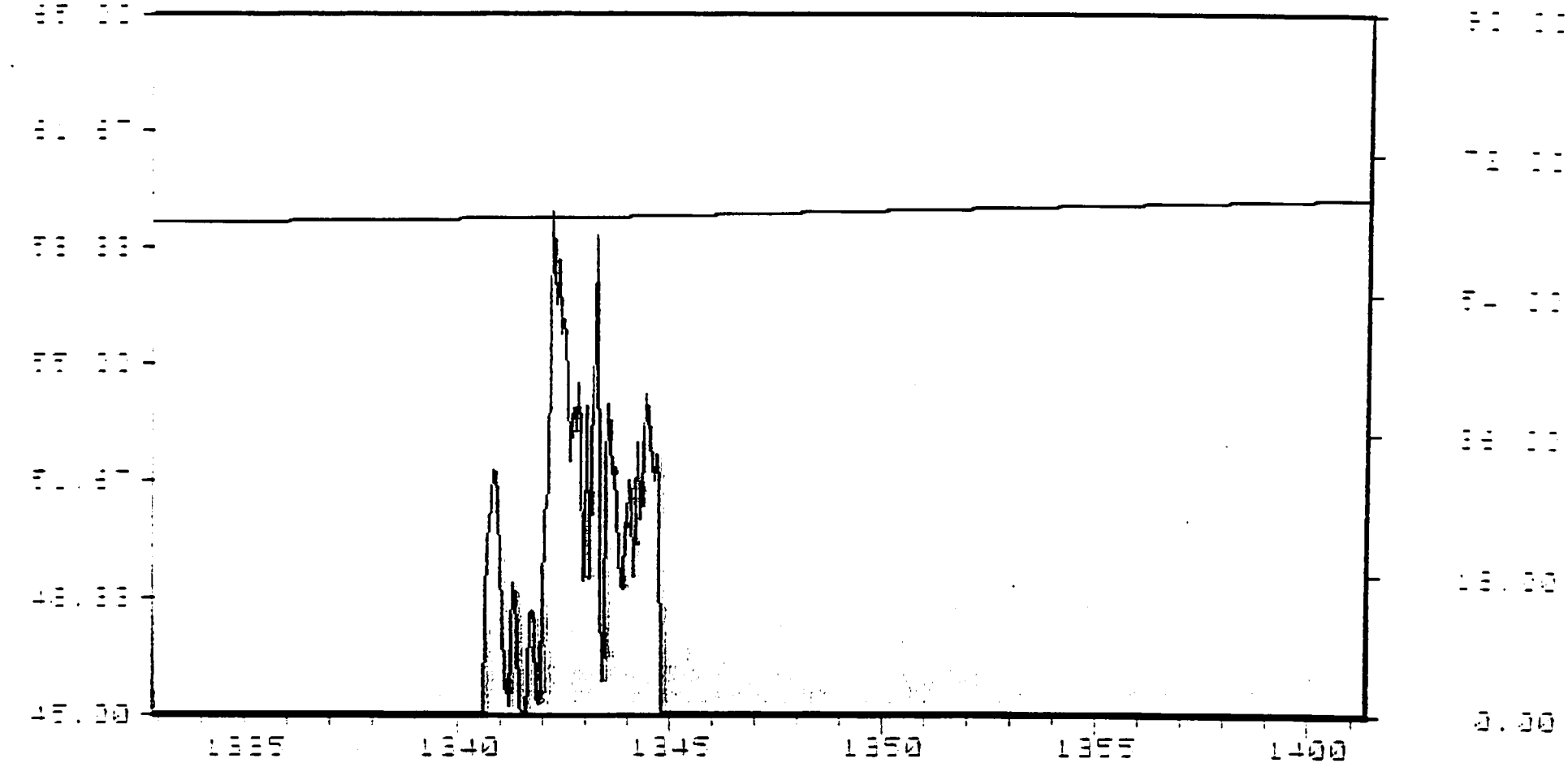
A503 15-DEC-96 13:23:33 035 -- 36.41 -2.33 AS P

284.	593.	14.1	223.	-7.3	-8.5	274/23



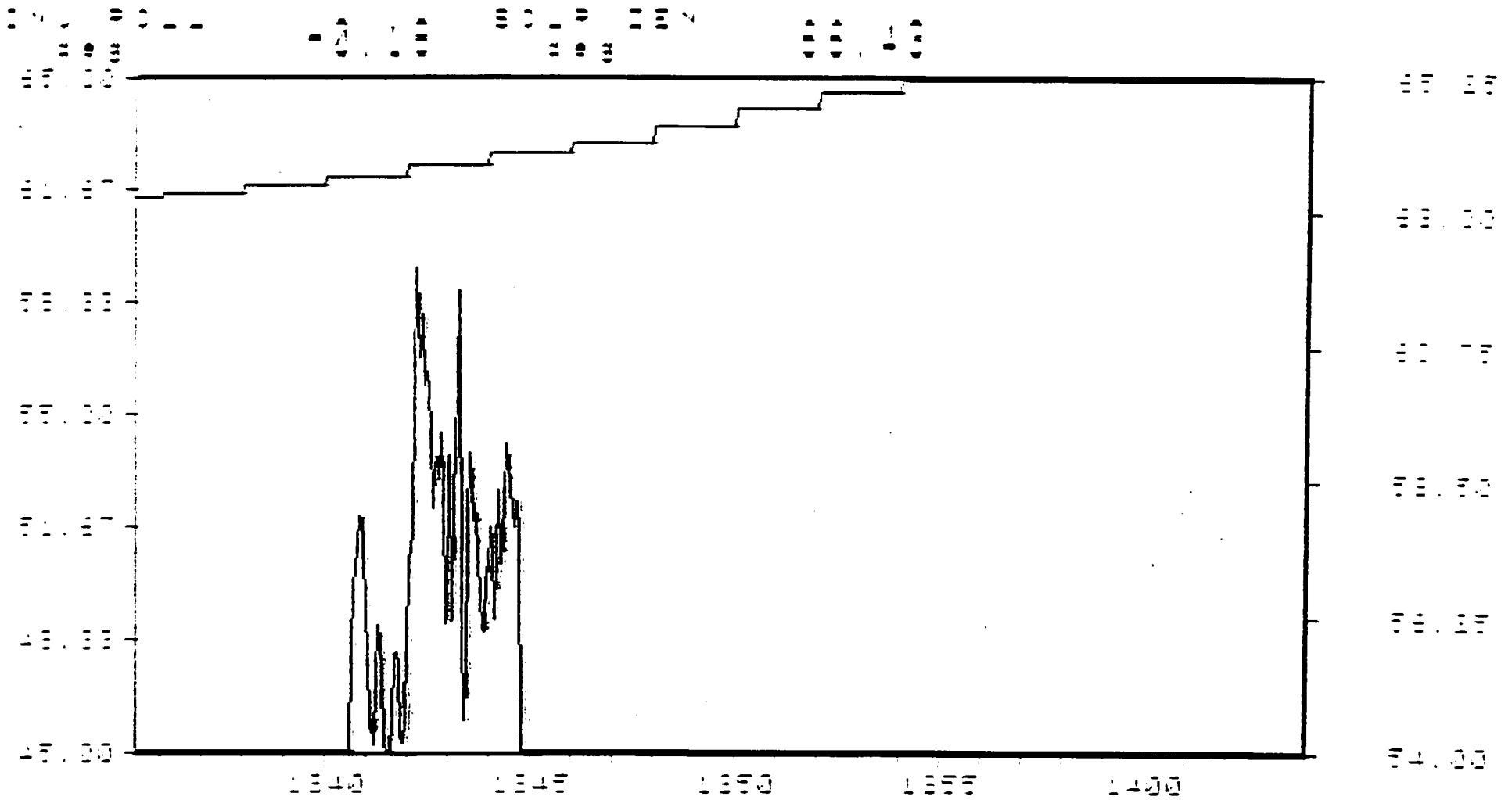
A	B	C	D	E	F	G	H
SELECT	PARAS	FREQ	ZOOM			VIDEO	HELP

HDG	SPR	PHGT	TAS	TAT	DEW	WIND
degT	mb	kft	knots	C	C	deg m/s
7.	1003.	0.3	184.	14.2	13.8	190/ 3



A	B	C	D	E	F	G	H
SELECT	PARAS	FREQ	ZOOM			VIDEO	HELP

HDG degT	SPR mb	PHGT kft	TAS knots	TAT C	DEW C	WIND deg m/s
267.	1002.	0.3	184.	14.2	12.0	353/ 1

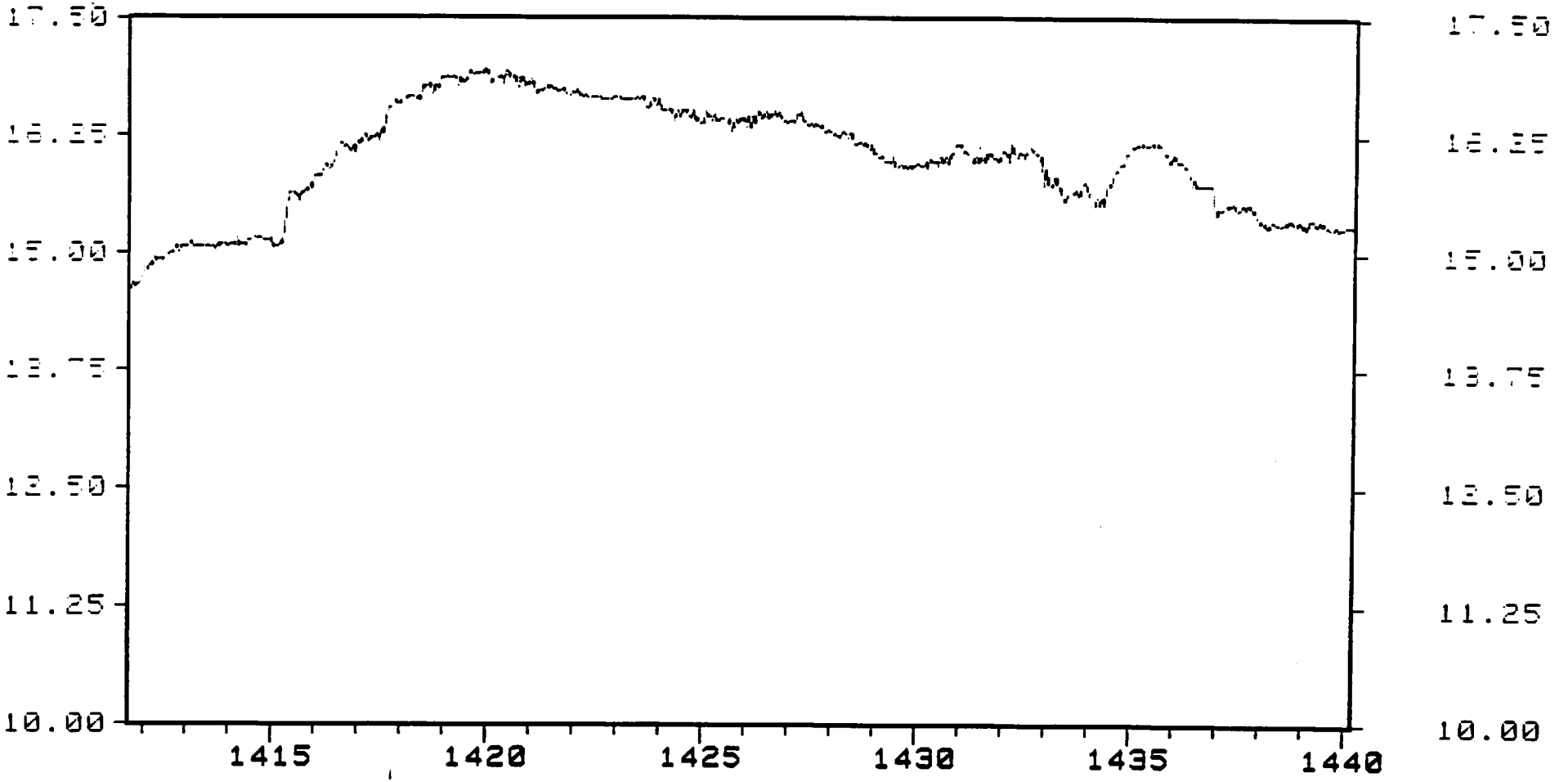


A	B	C	D	E	F	G	H
SELECT	PARAS	FREQ	ZOOM			VIDEO	HELP

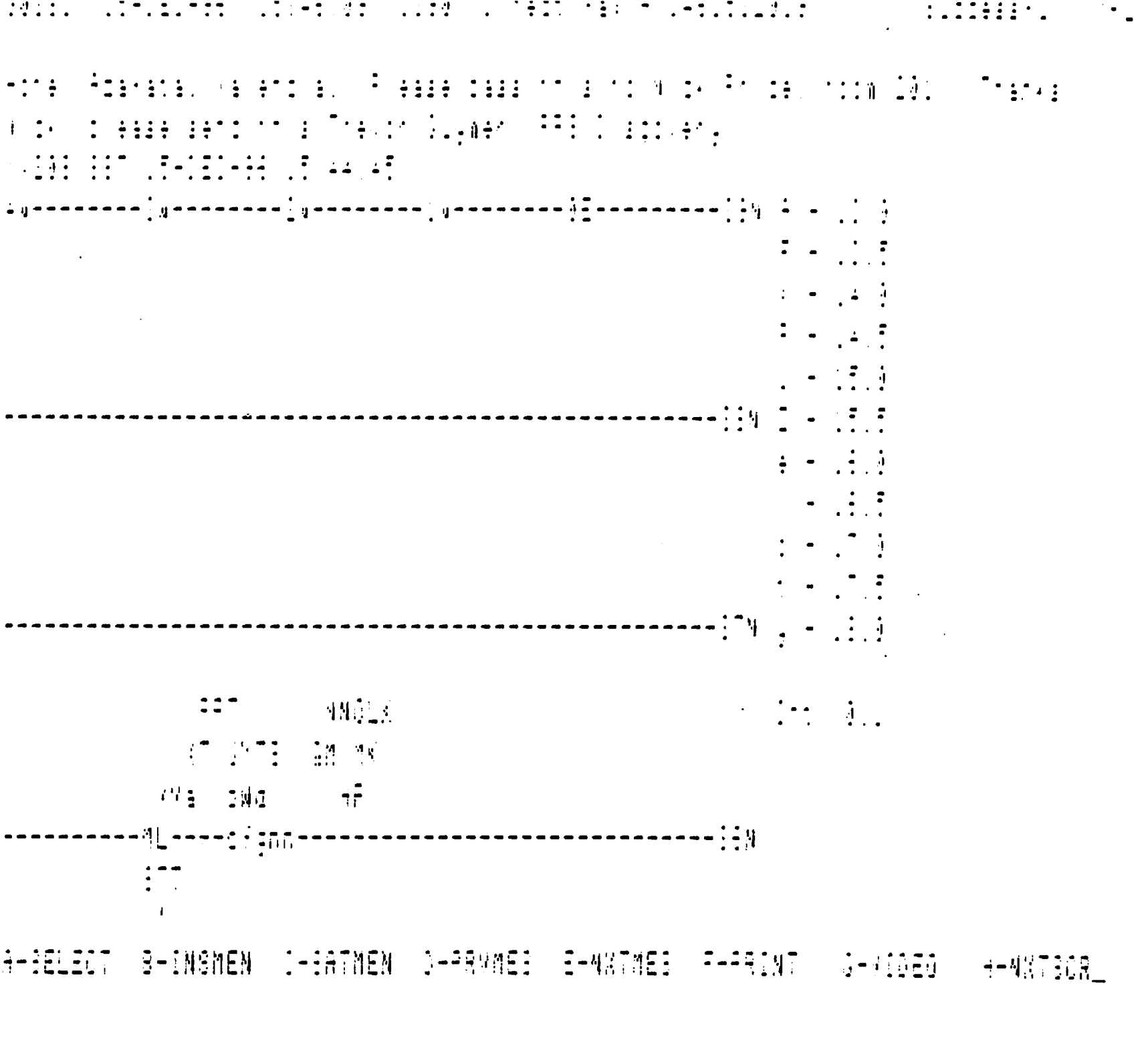
A503 15-DEC-96 14:40:06 061 36.50 -2.23 AS P

[illegible] deg	[illegible] mb	[illegible] %	[illegible] knots	T C	DEW C	WIND deg m/s
268.	1002.	0.3	183.	13.8	14.1	344/ 4

S.TEMP C 15.28

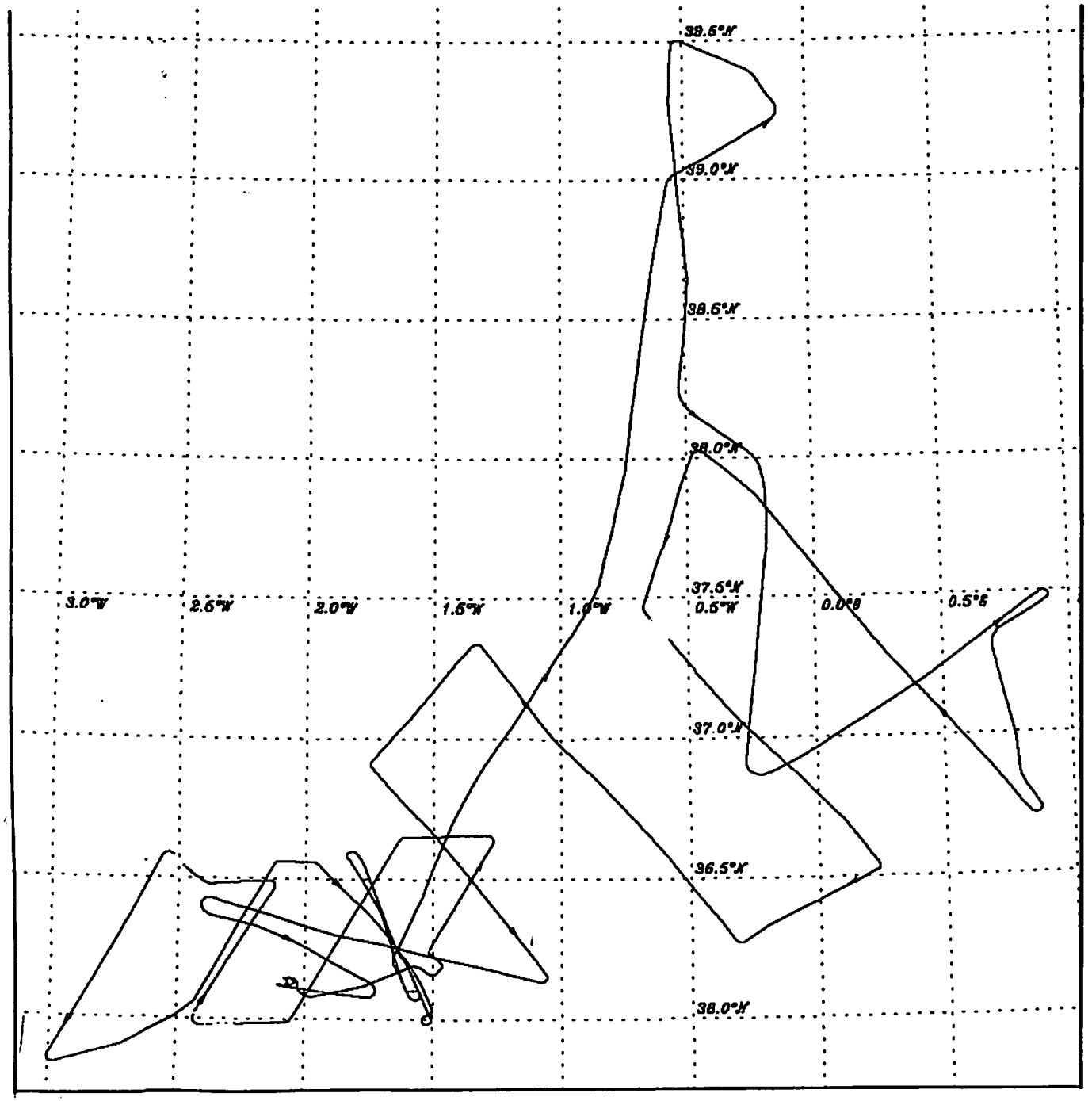


A	B	C	D	E	F	G	H
SELECT	PARAS	FREQ	ZOOM			VIDEO	HELP



A503

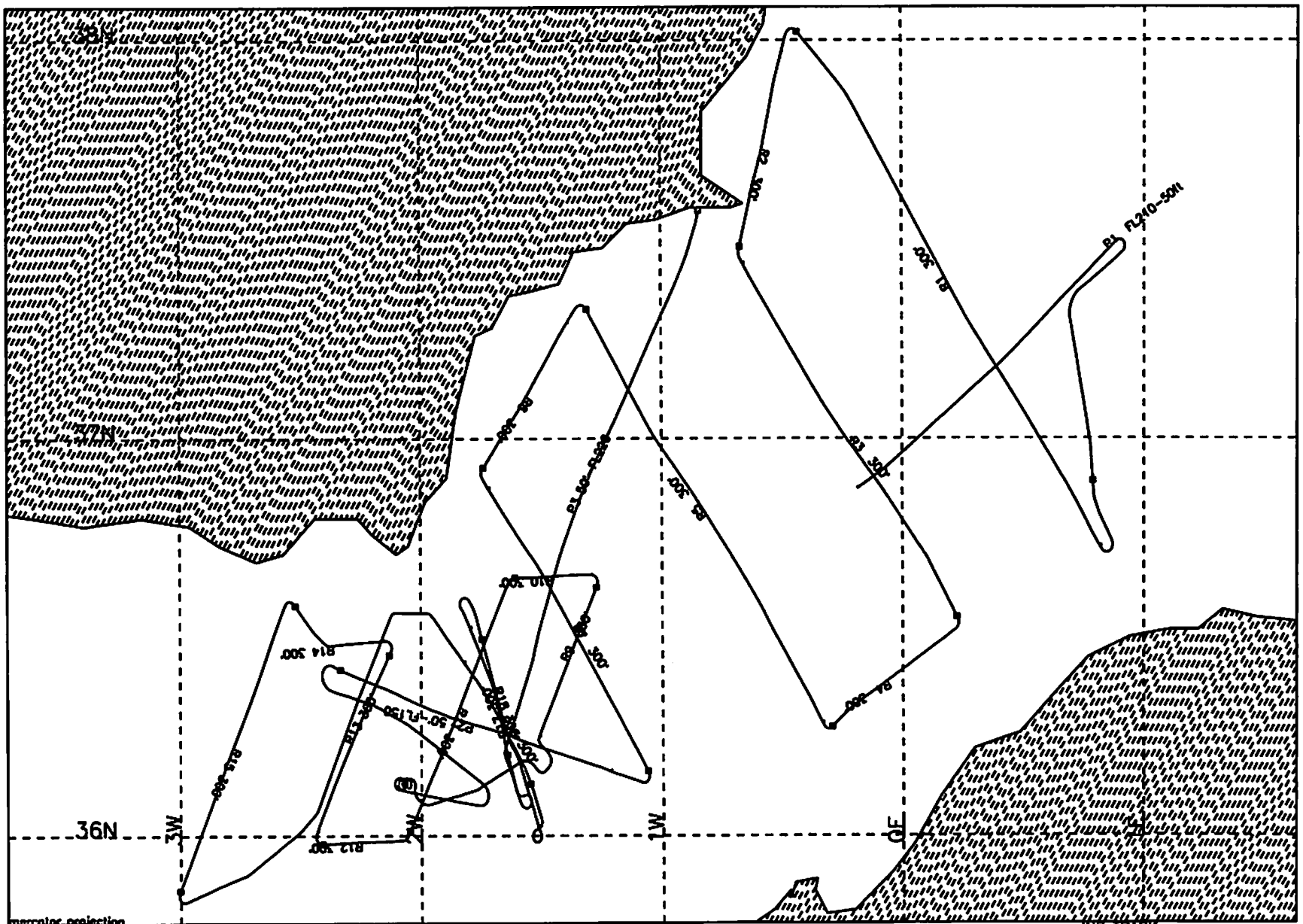
GPS data
06:40:30 — 17:20:27

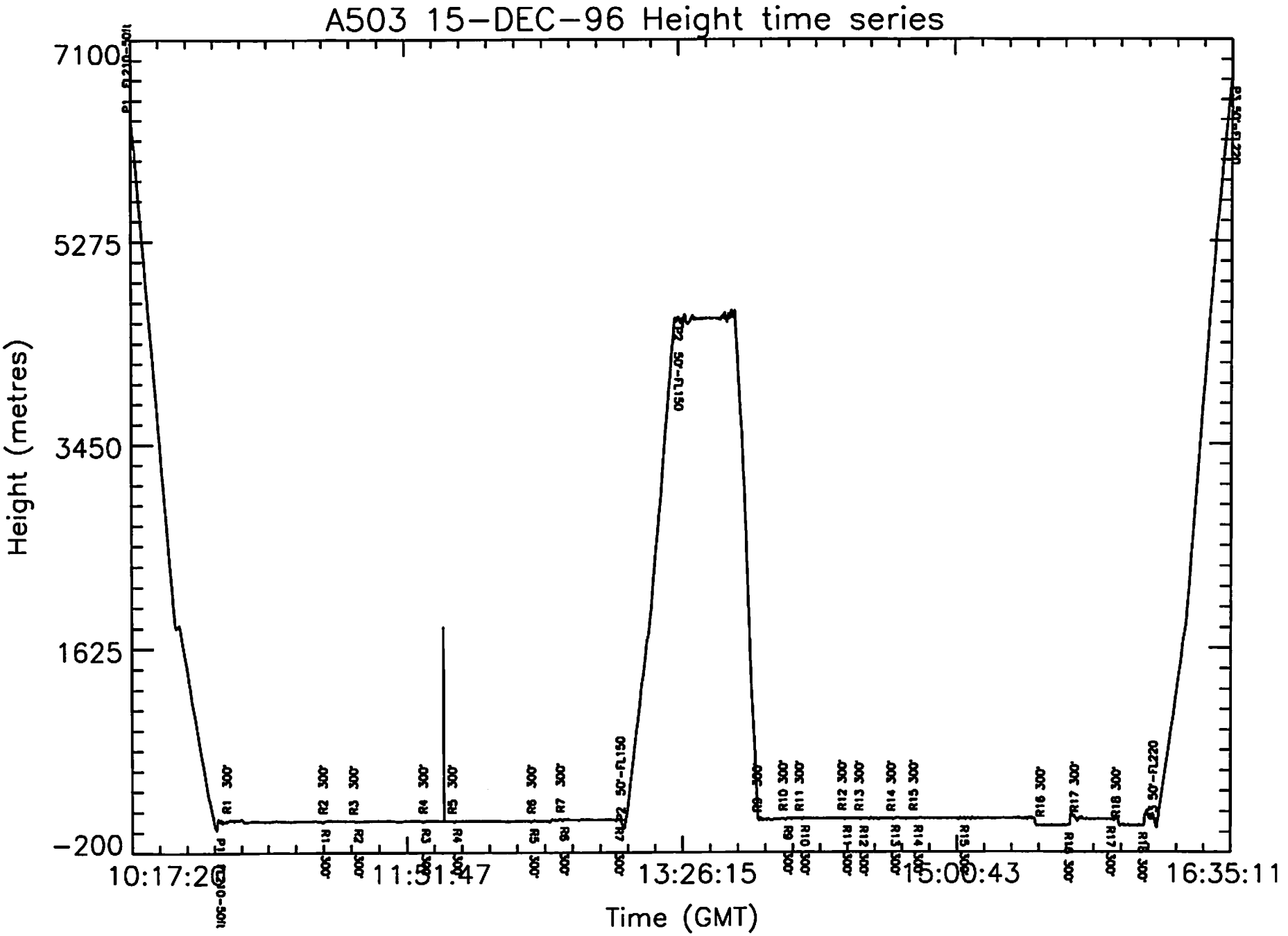


LIST OF FORMS USED ON FLIGHT

No. of forms	Form Title
1	Aircraft Scientist de-briefing sheet
9	Aircraft Scientist log
1	Aircraft Scientist post flight requirements sheet
1	Interactive log
1	Flight Leader pre-flight check form
2	Flight Leader in-flight check form
4	Flight Leader in-flight log
3	Flight Leader Video tape log (photocopy original)
5	SAFIRE log
	CCN log
5	MARSS log
	DEIMOS log
	Chemistry log
1	Particulate / Filter boom Operator's log
7	2DC / FSSP / Holography Operator's log
	Sonde Ejector's log
1	Navigator's log
	Photographic log (photocopy original)
✓	Instrument status forms
✓	RTD prints
✓	Raw data plots
	Weather charts
	Satellite pictures
✓	GPS track

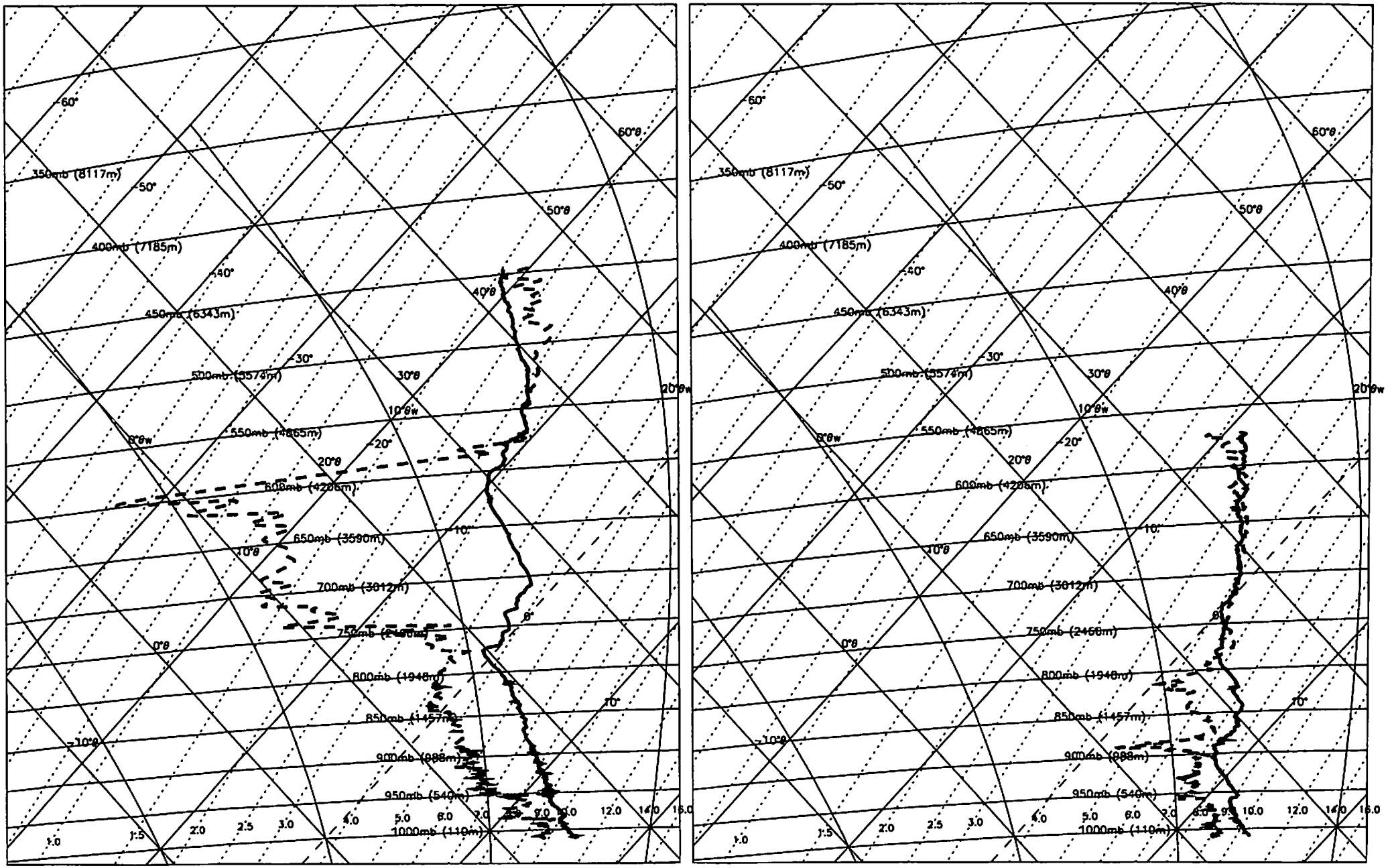
A503 15-DEC-96 10:17:20-16:35:11GMT




A503 15-DEC-96 Height time series
7100
5275
3450
1625
-200
Height (metres)
10:17:20
11:31:47
13:26:15
15:00:43
16:35:11
Time (GMT)

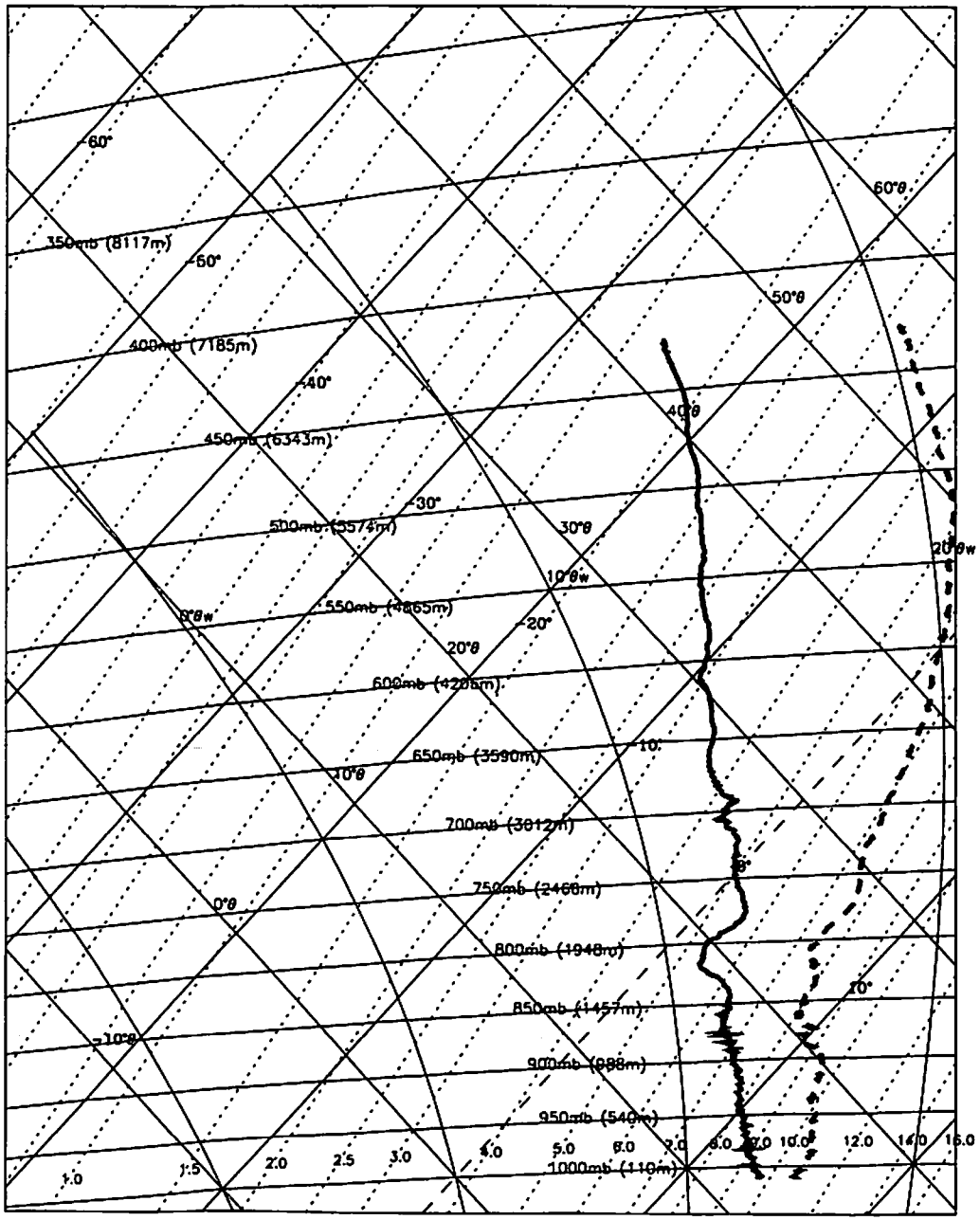
A503 15-DEC-96

P1 FL210-50ft(101720-104624) + P2 50'-FL150(130613-132431)

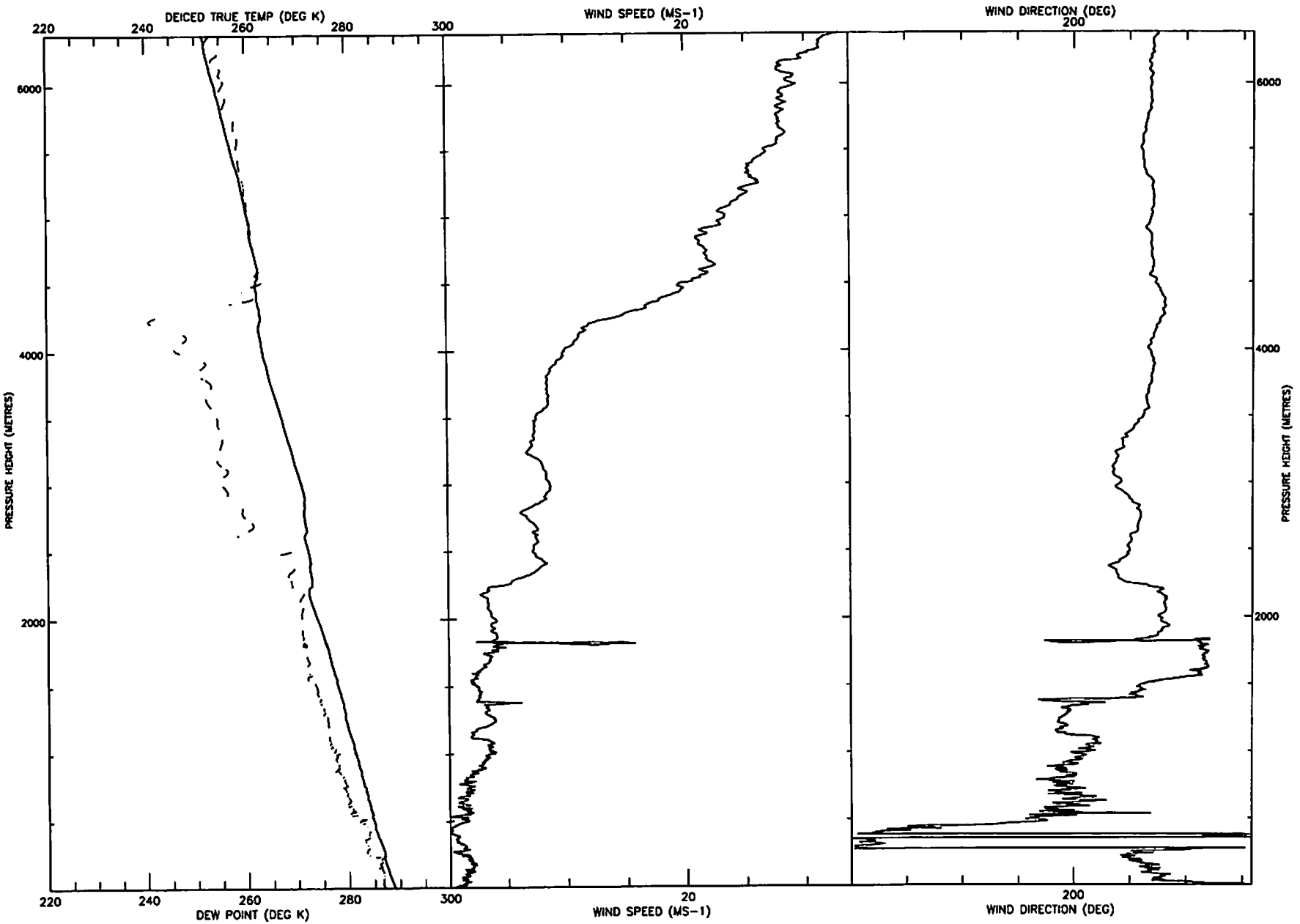


A503 15-DEC-96

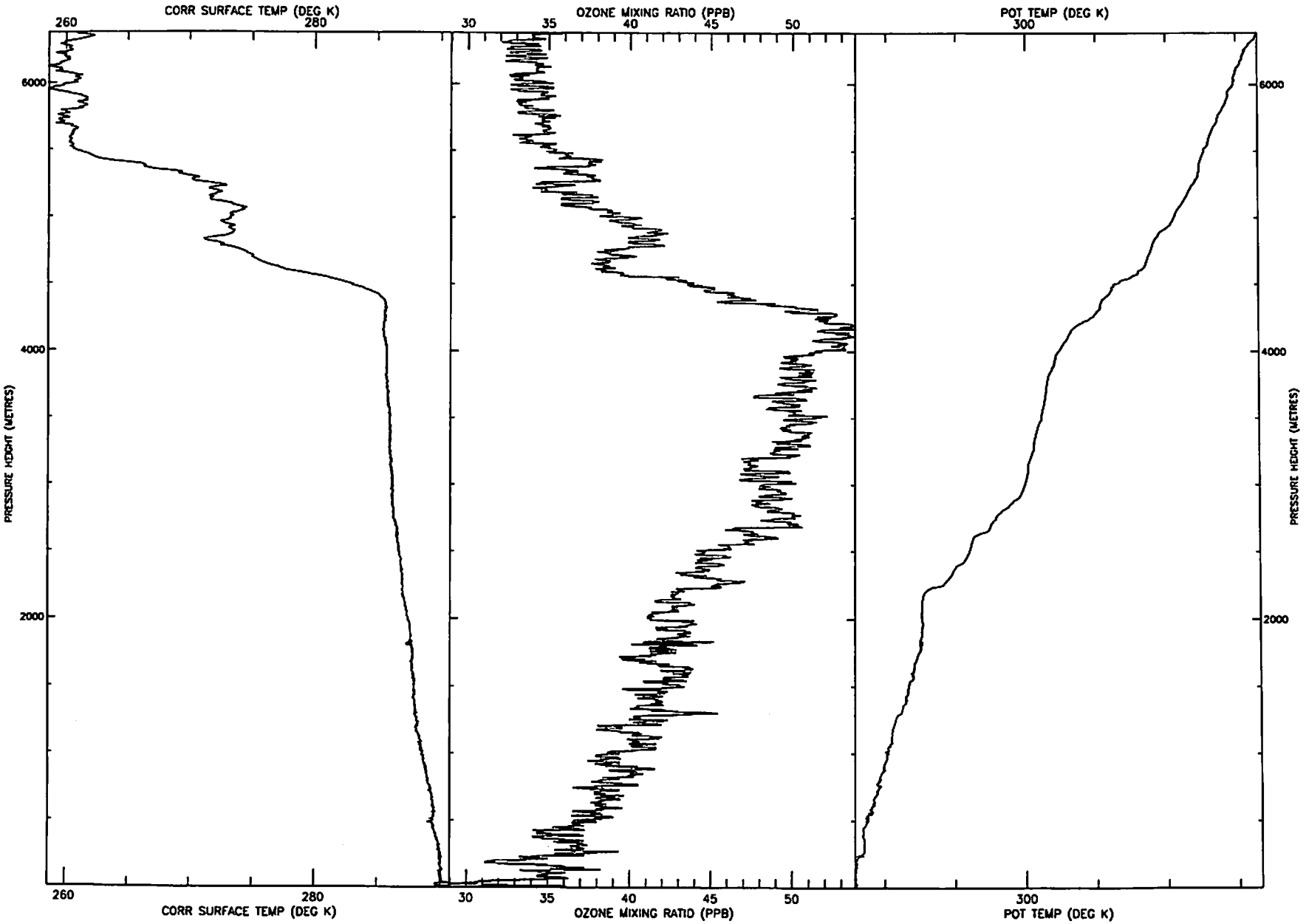
P3 50'-FL220(160939-163511)



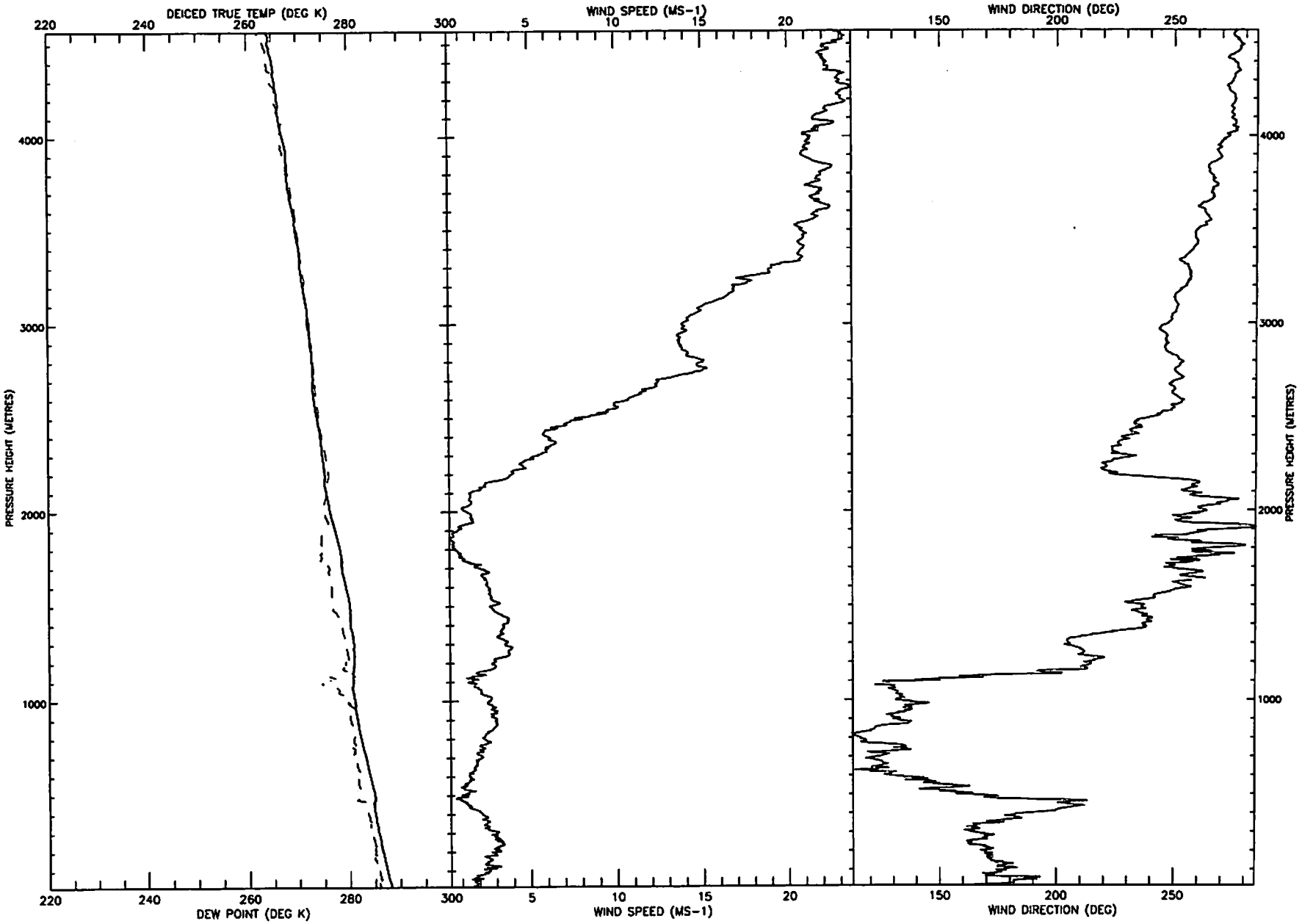
A503 15-DEC-96 P1 FL210-50ft From 101720-104624 *Plotted 20-Jan-1997 15:45*



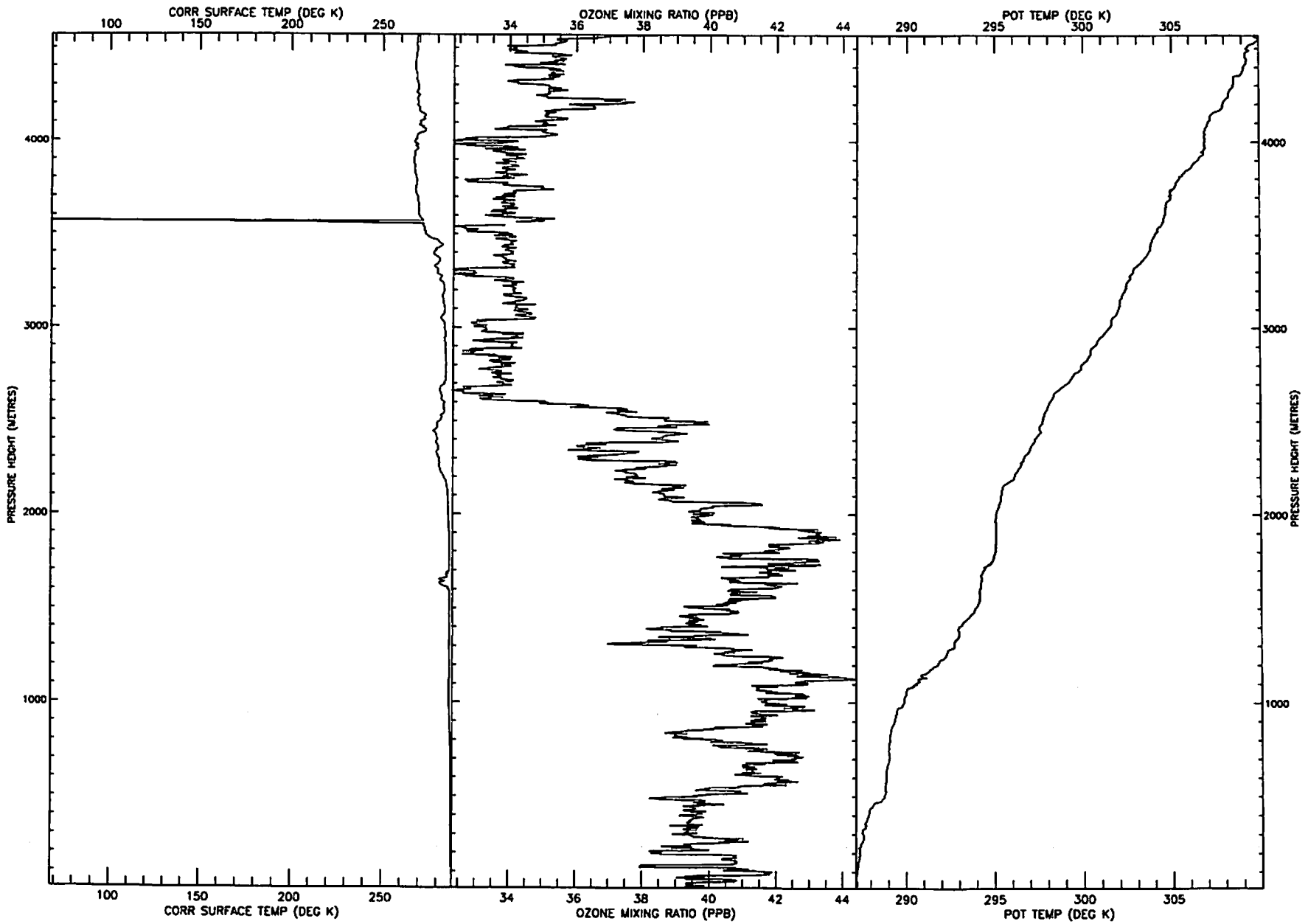
A503 15-DEC-96 P1 FL210-50ft From 101720-104624 *Plotted 20-Jan-1997 15:45*



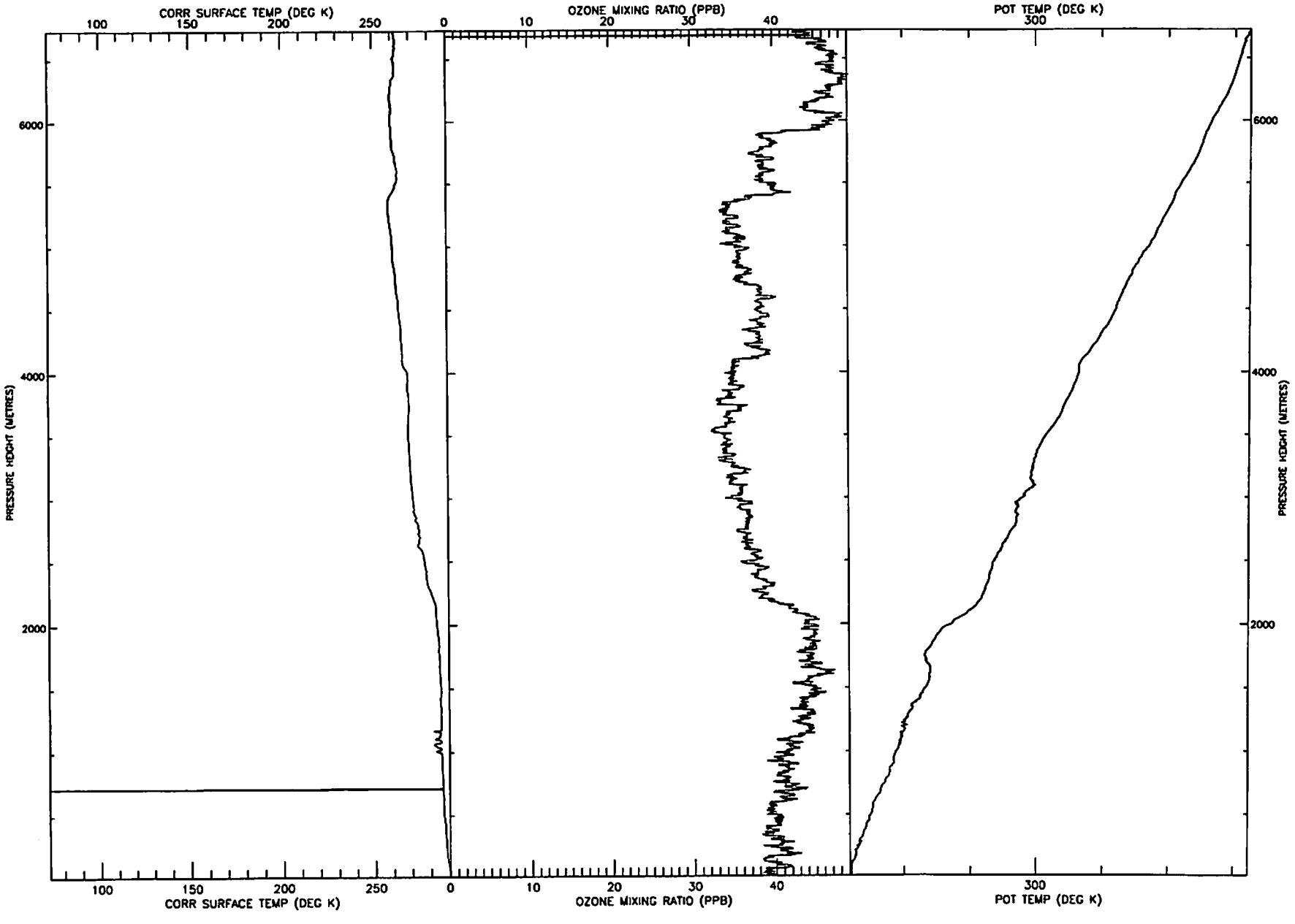
A503 15-DEC-96 P2 50'-FL150 From 130613-132431 *Plotted 20-Jan-1997 16:08*



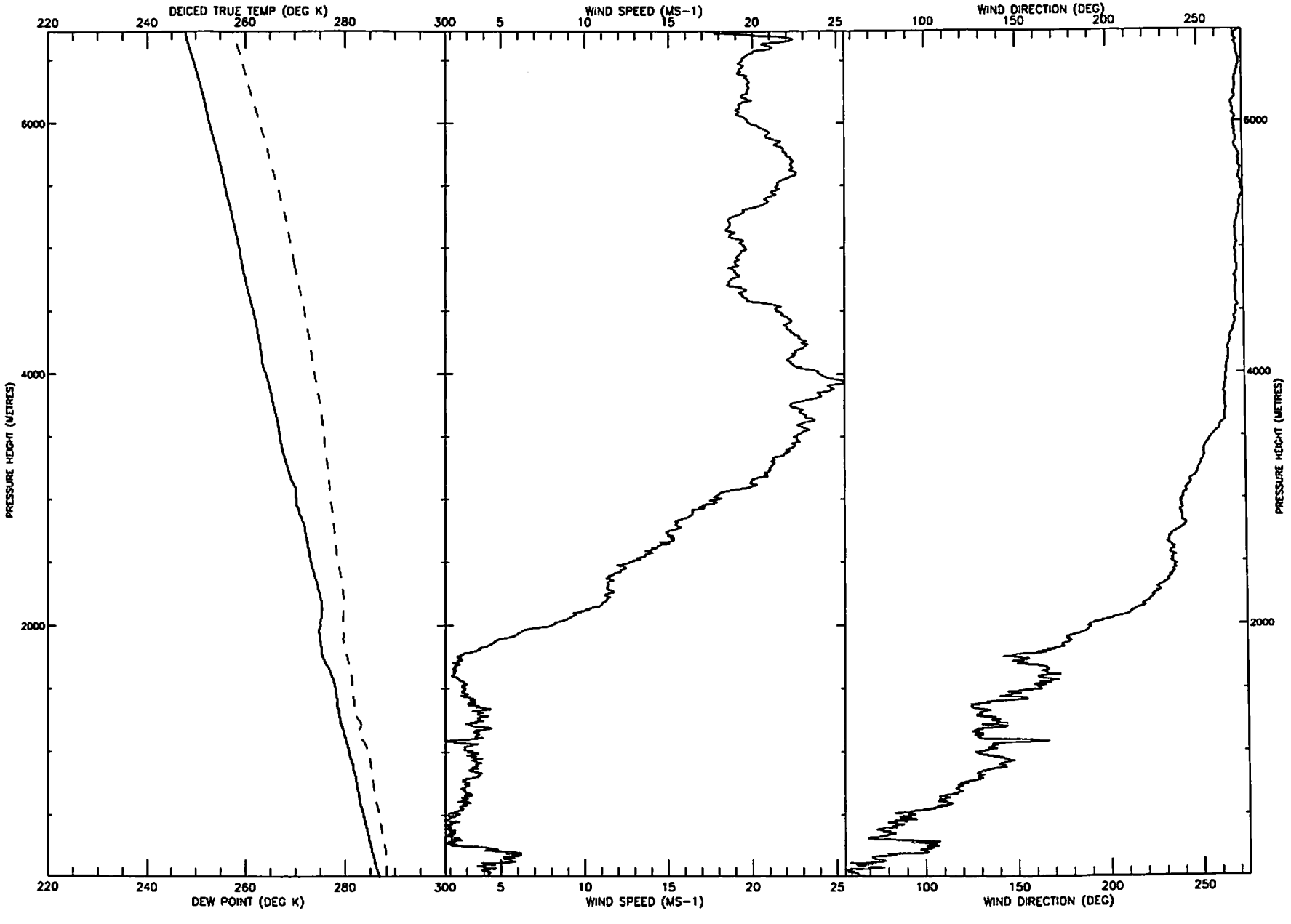
A503 15-DEC-96 P2 50'-FL150 From 130613-132431 *Plotted 20-Jan-1997 16:08*



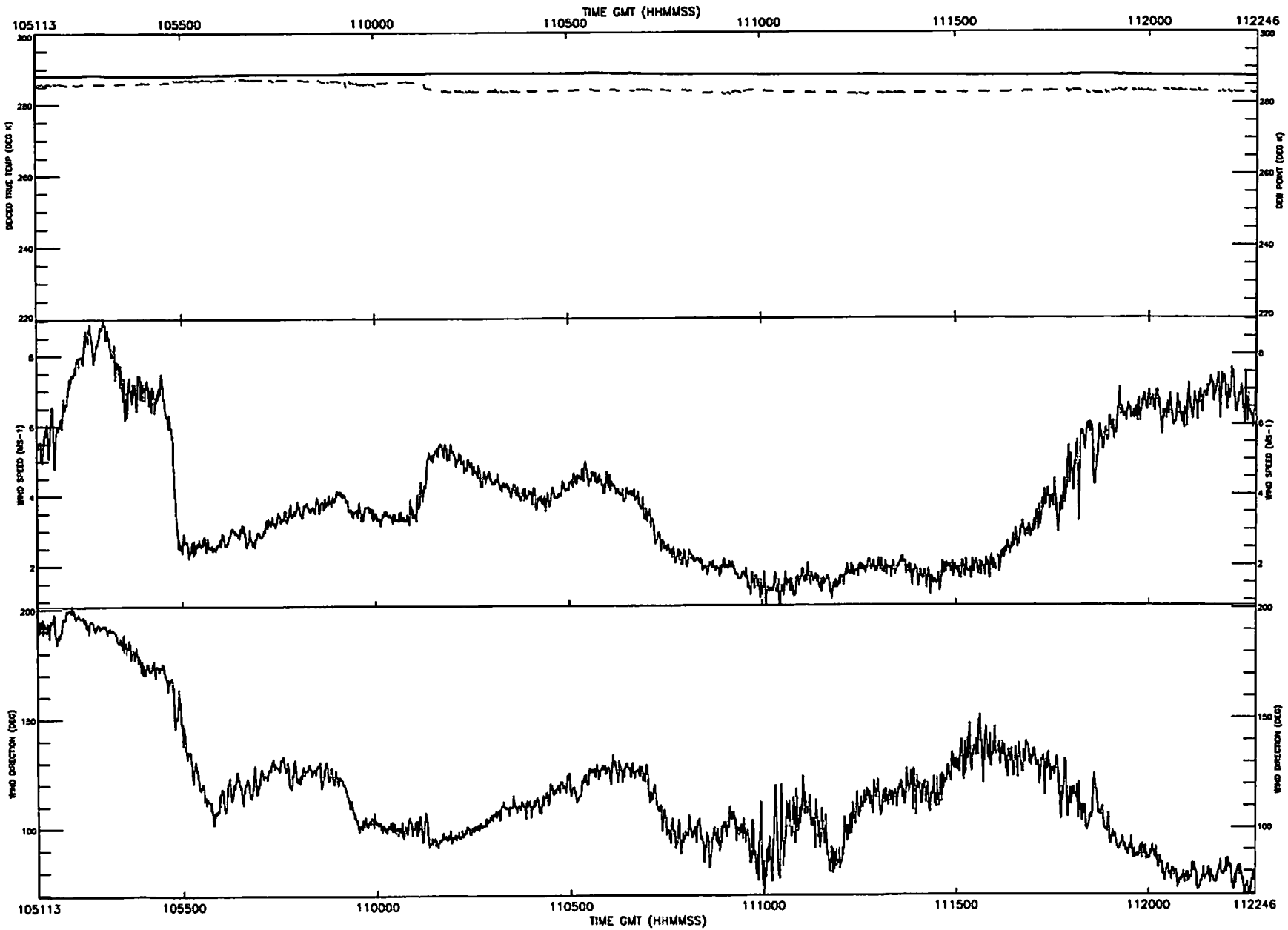
A503 15-DEC-96 P3 50'-FL220 From 160939-163511 *Plotted 20-Jan-1997 16:28*



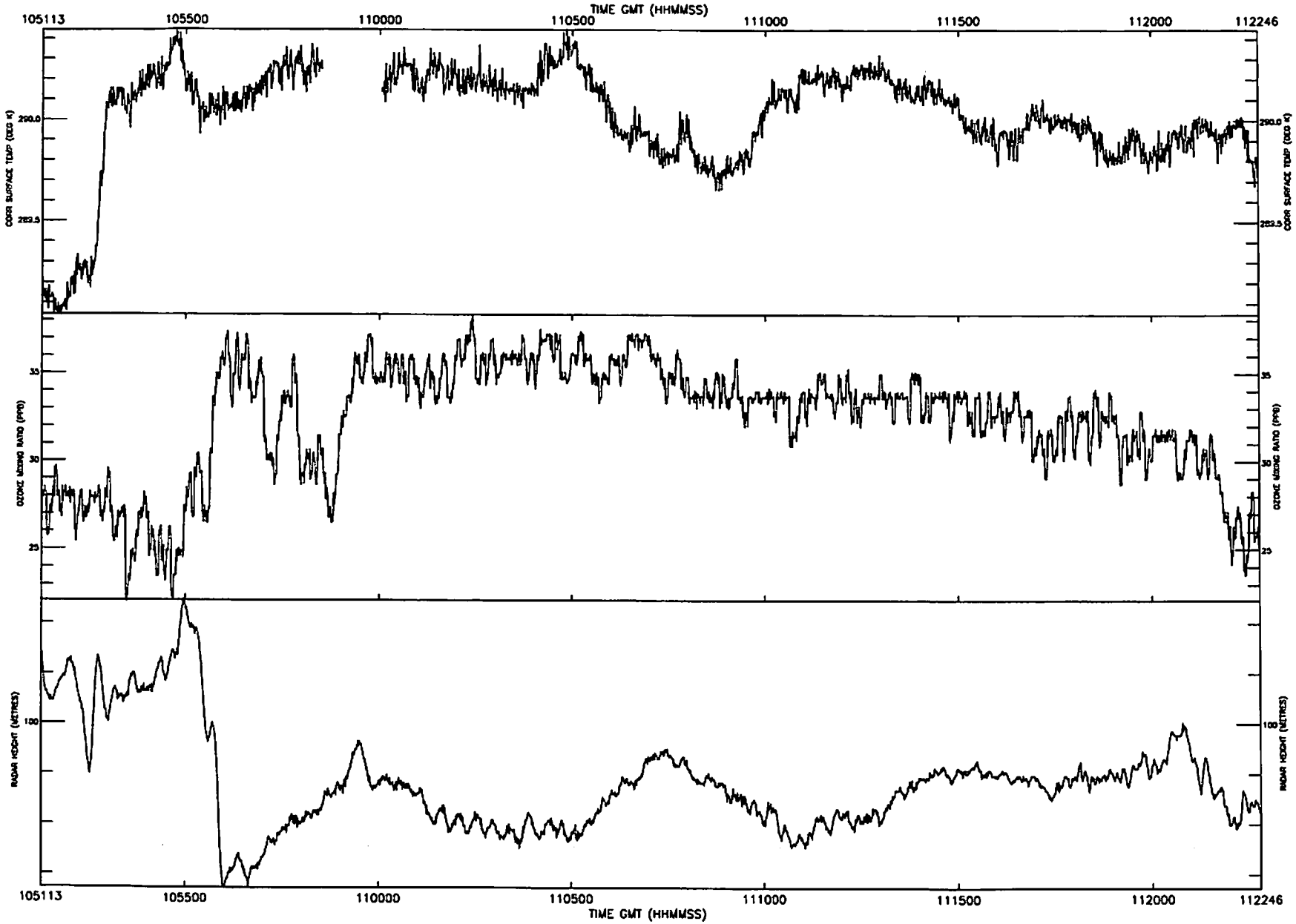
A503 15-DEC-96 P3 50'-FL220 From 160939-163511 *Plotted 20-Jan-1997 16:28*



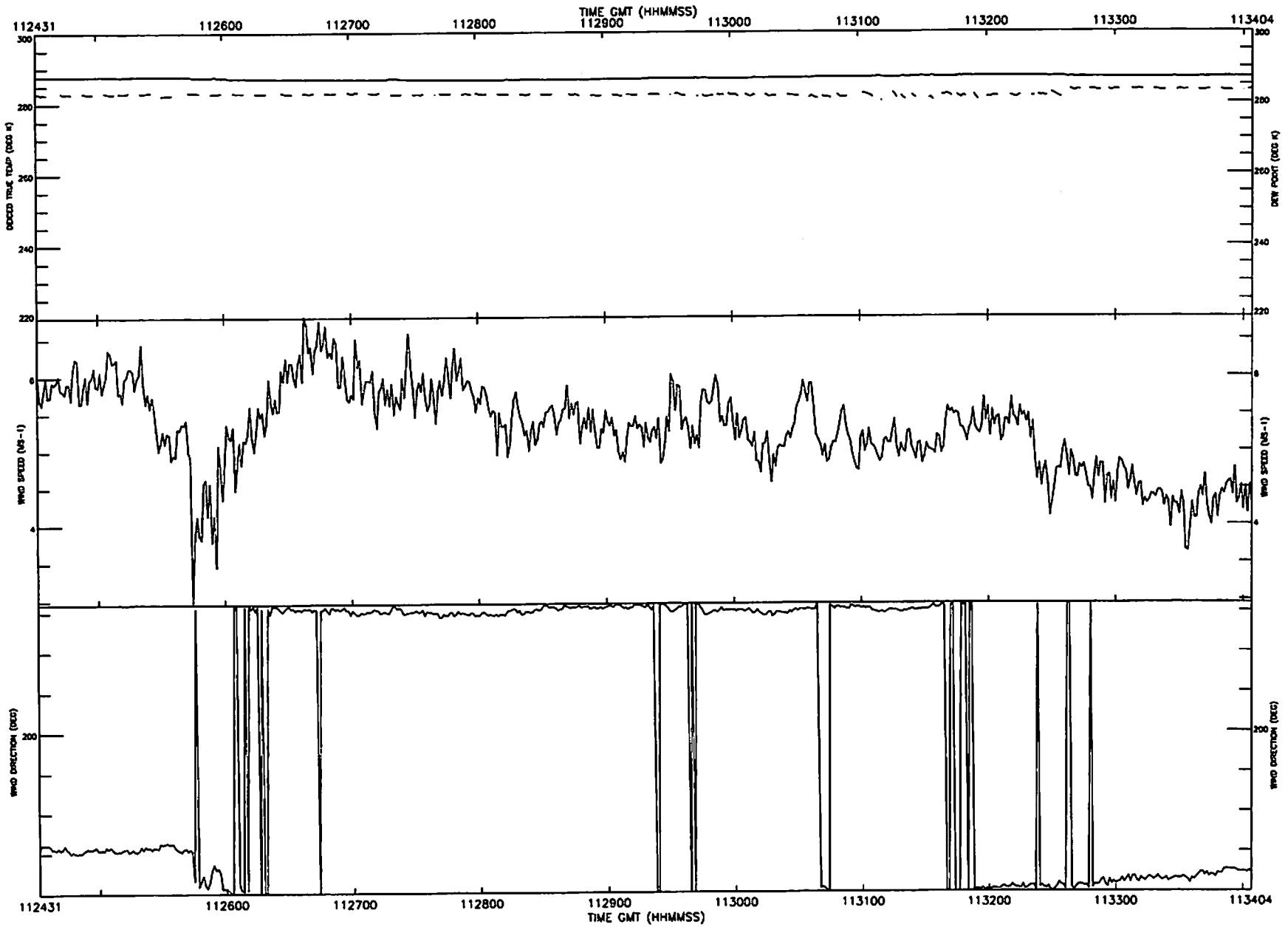
A503 15-DEC-96 R1 300' From 105113-112246 *Plotted 20-Jan-1997 15:48*



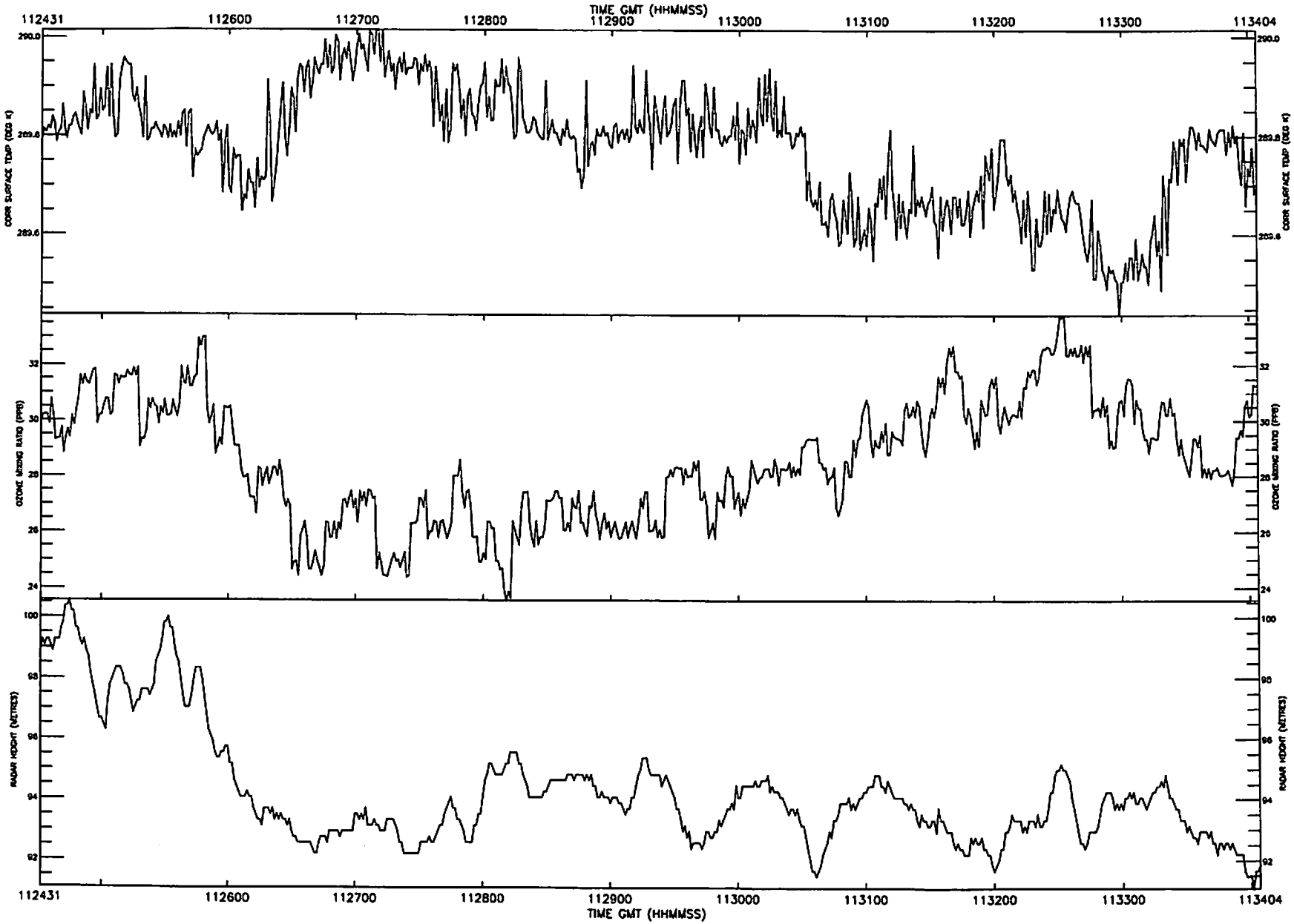
A503 15-DEC-96 R1 300' From 105113-112246 *Plotted 20-Jan-1997 15:49*



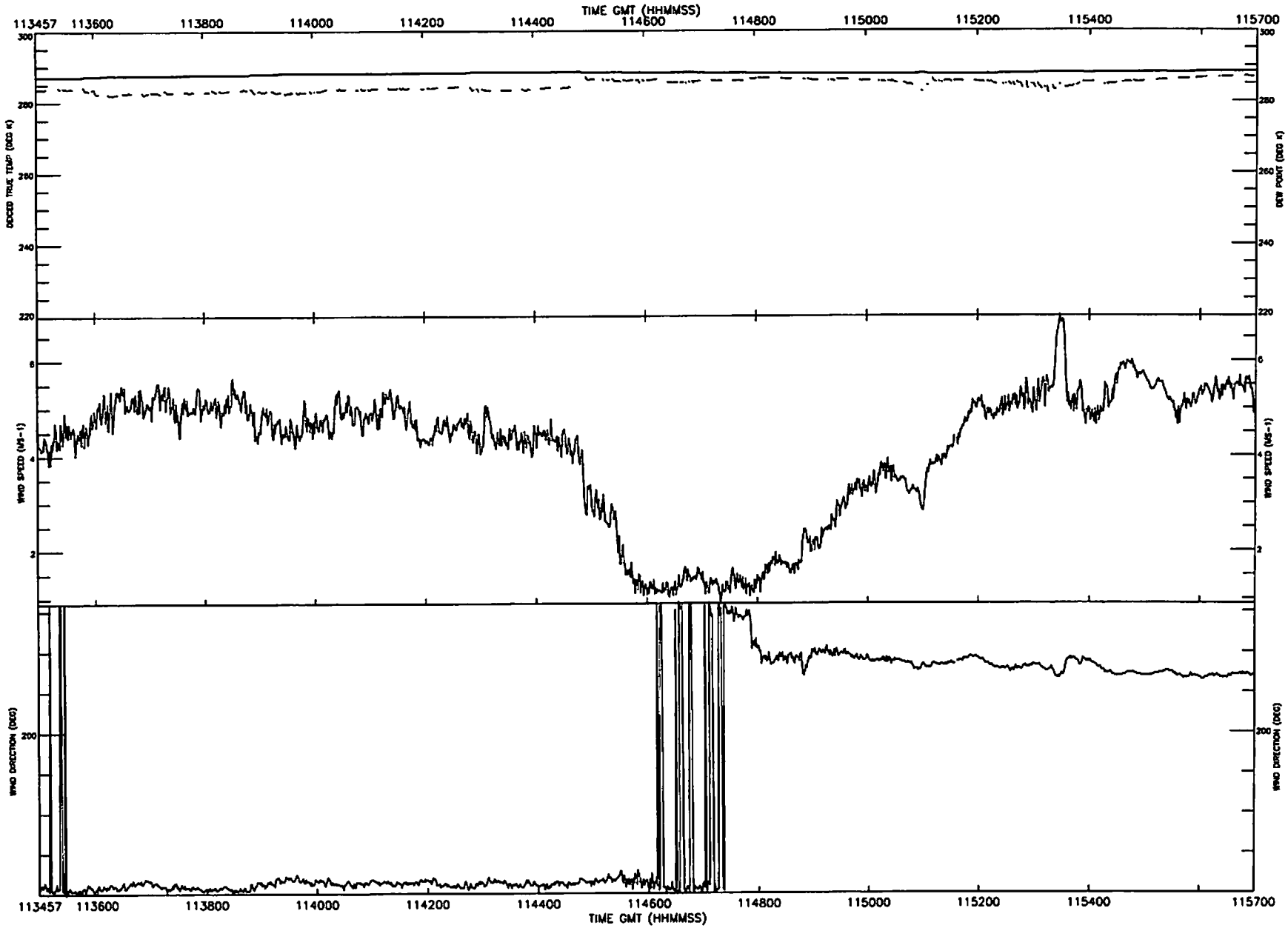
A503 15-DEC-96 R2 300' From 112431-113404 *Plotted 20-Jan-1997 15:51*



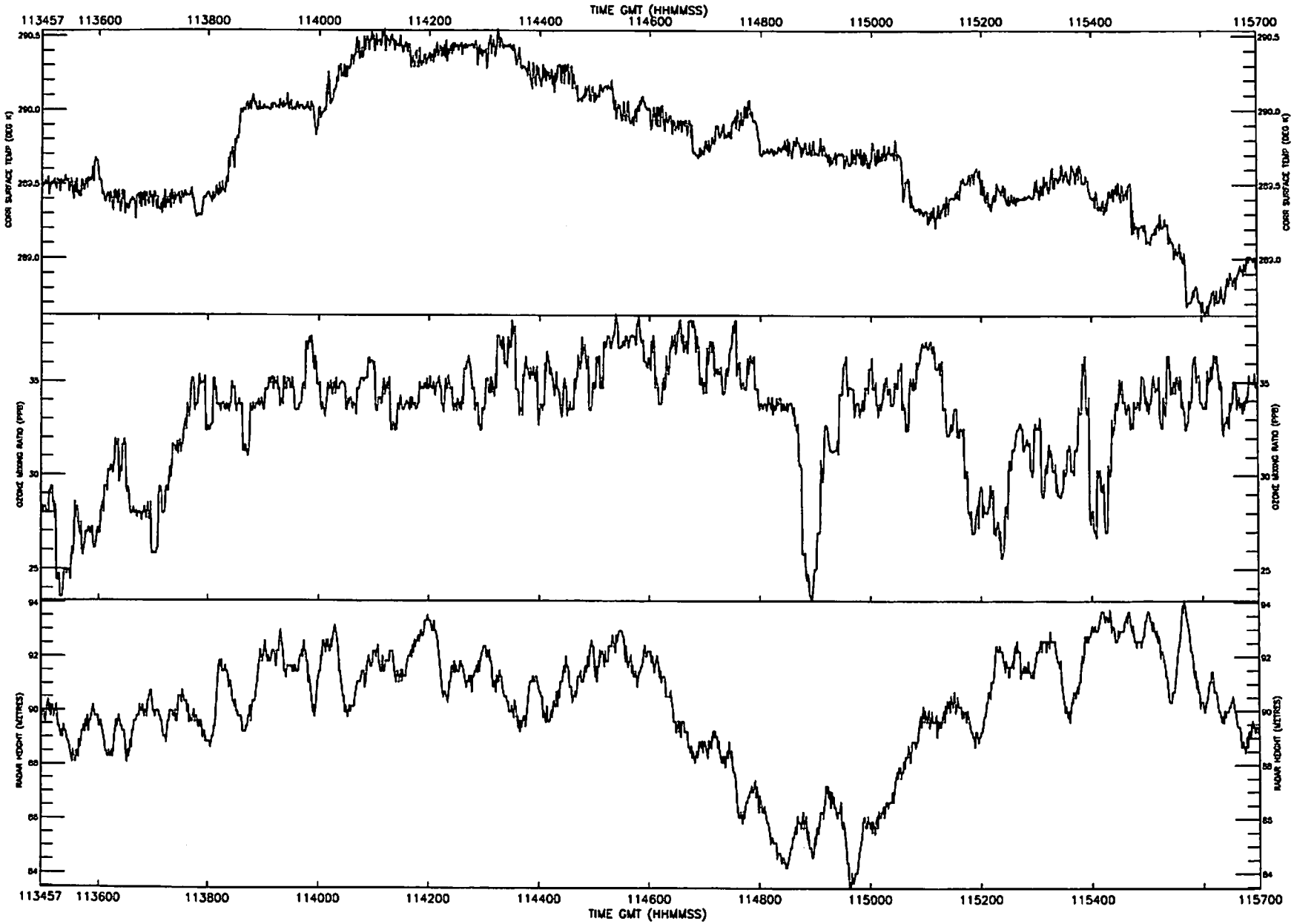
A503 15-DEC-96 R2 300' From 112431-113404 *Plotted 20-Jan-1997 15:51*



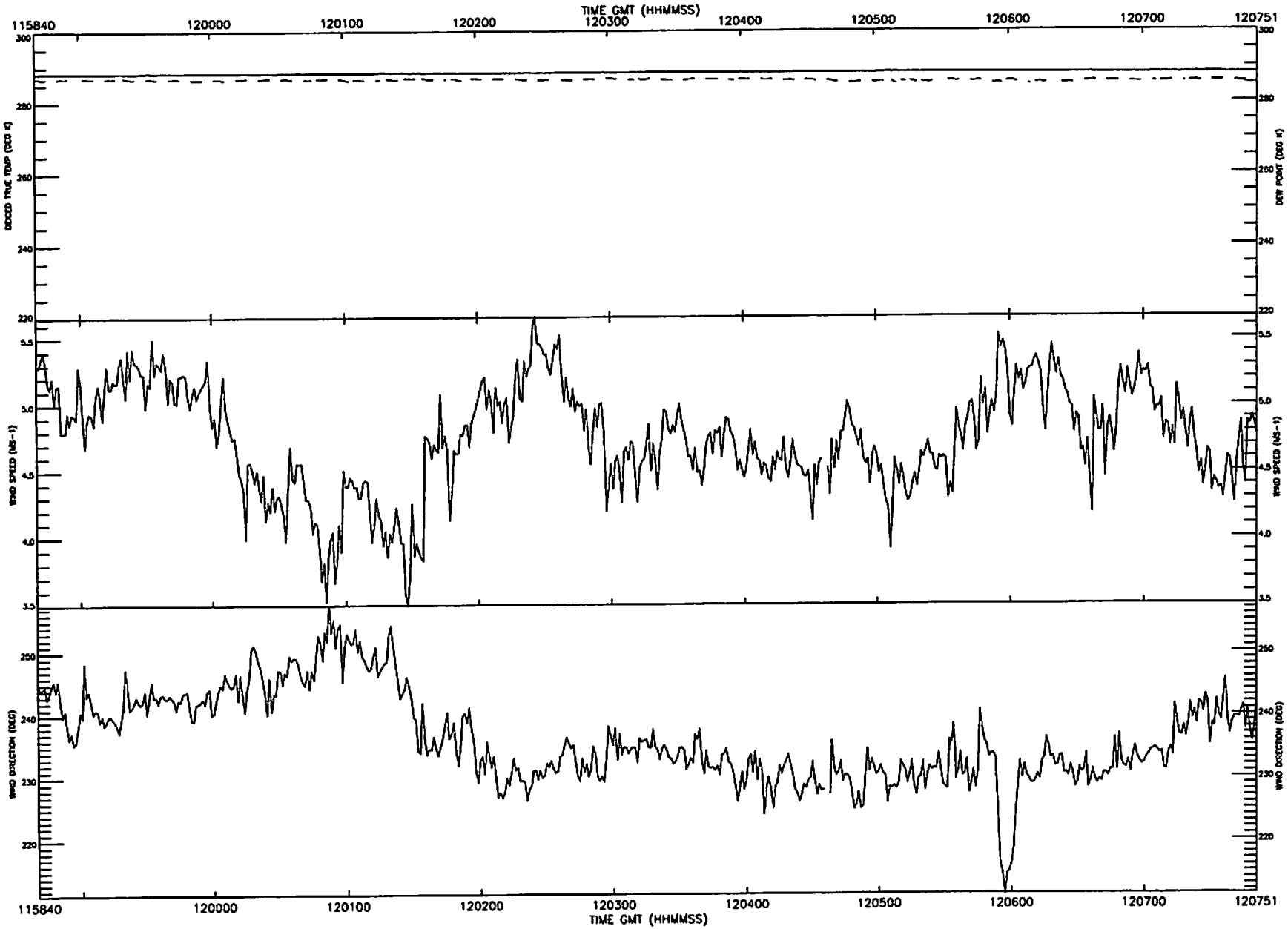
A503 15-DEC-96 R3 300' From 113457-115700 *Plotted 20-Jan-1997 15:54*



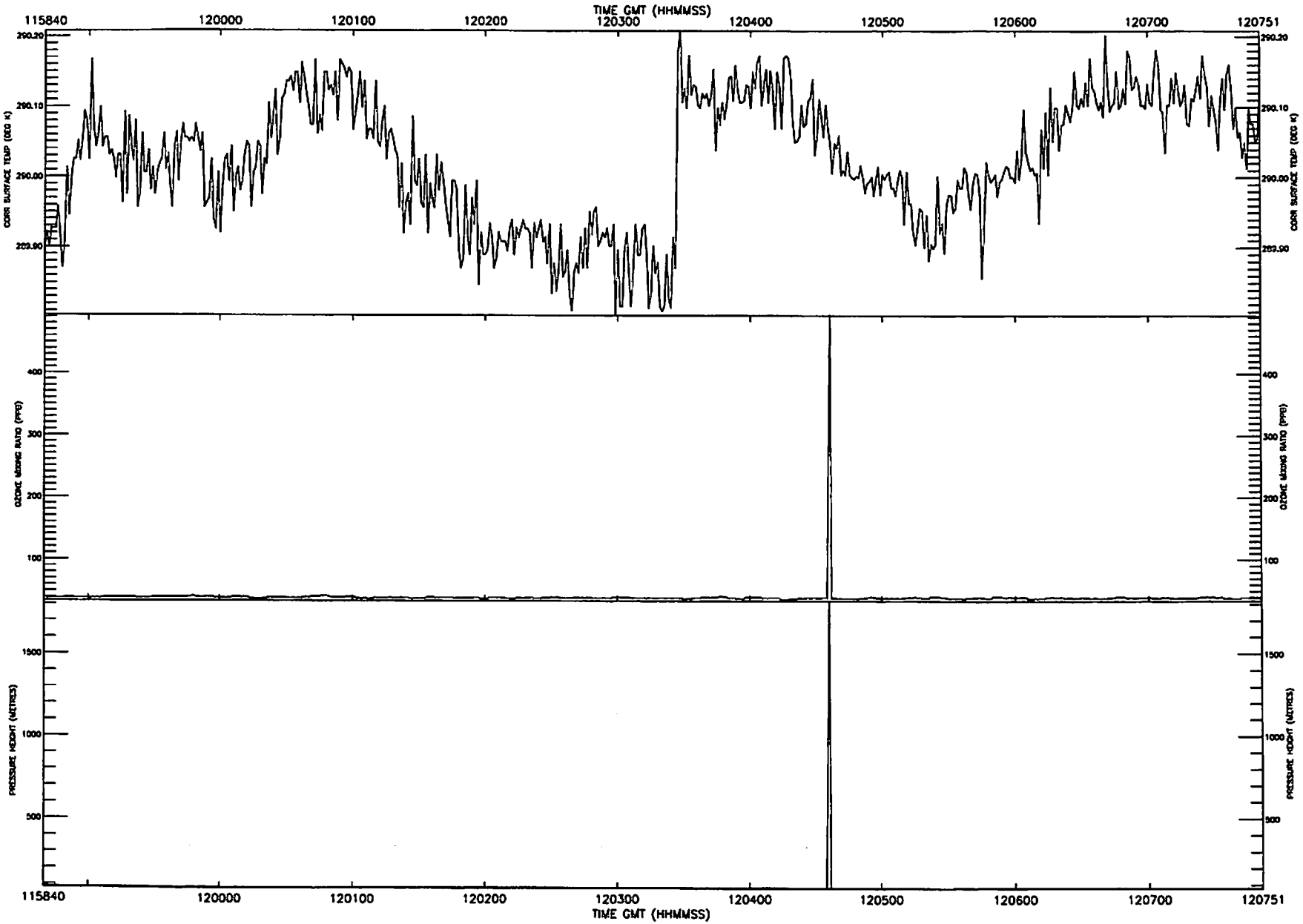
A503 15-DEC-96 R3 300' From 113457-115700 *Plotted 20-Jan-1997 15:54*



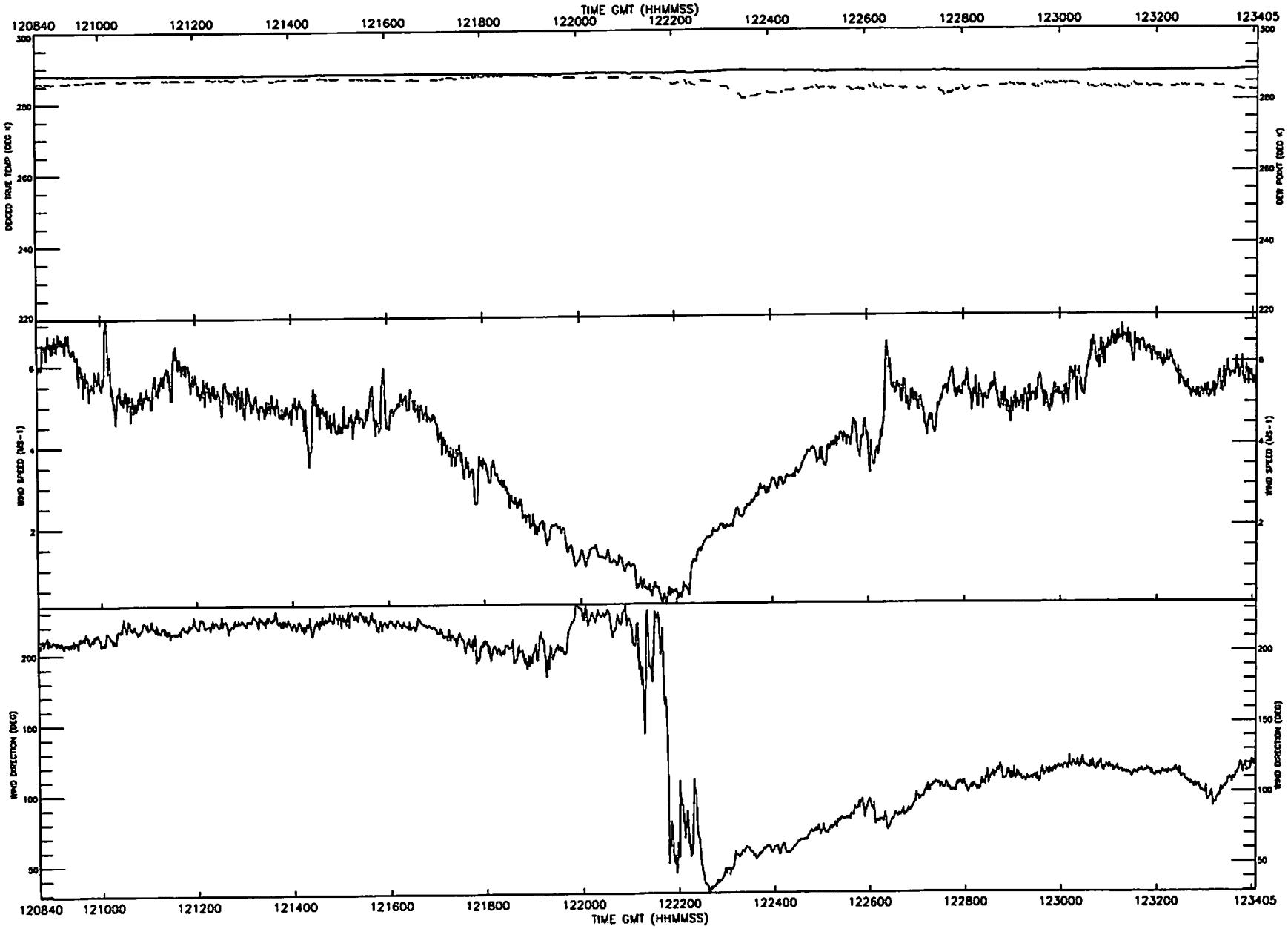
A503 15-DEC-96 R4 300' From 115840-120751 *Plotted 20-Jan-1997 15:56*



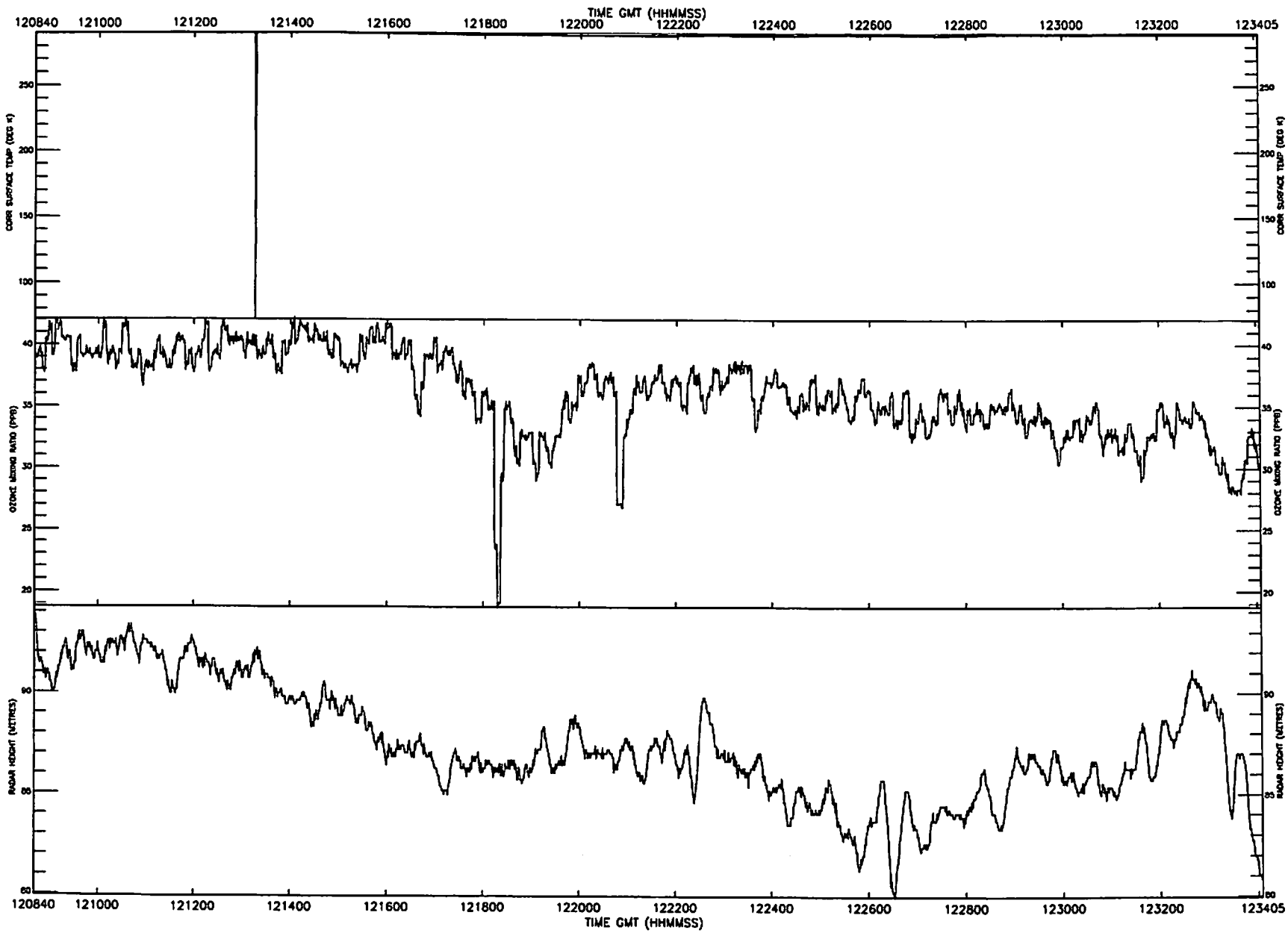
A503 15-DEC-96 R4 300' From 115840-120751 *Plotted 20-Jan-1997 15:56*



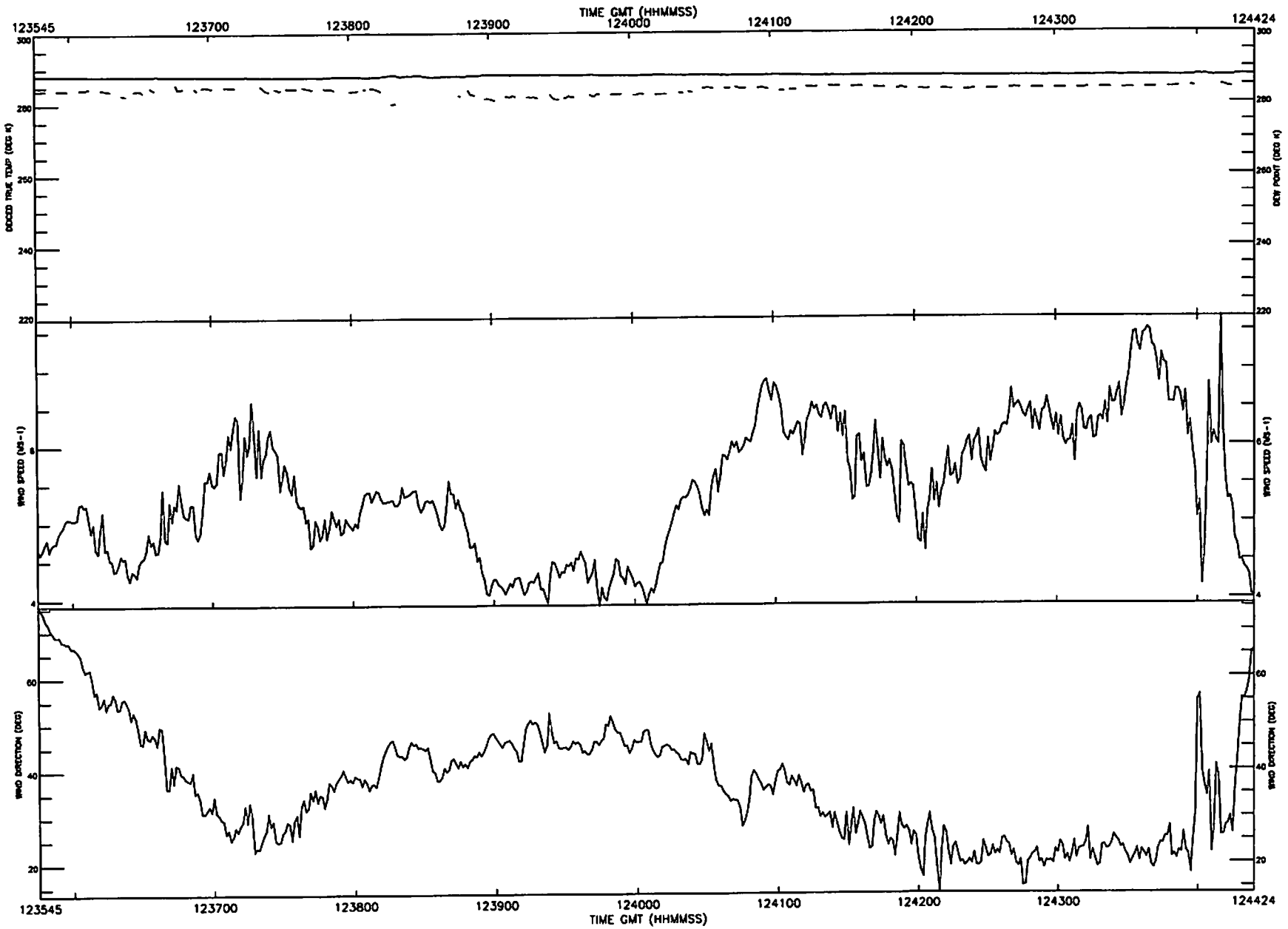
A503 15-DEC-96 R5 300' From 120840-123405 *Plotted 20-Jan-1997 16:00*



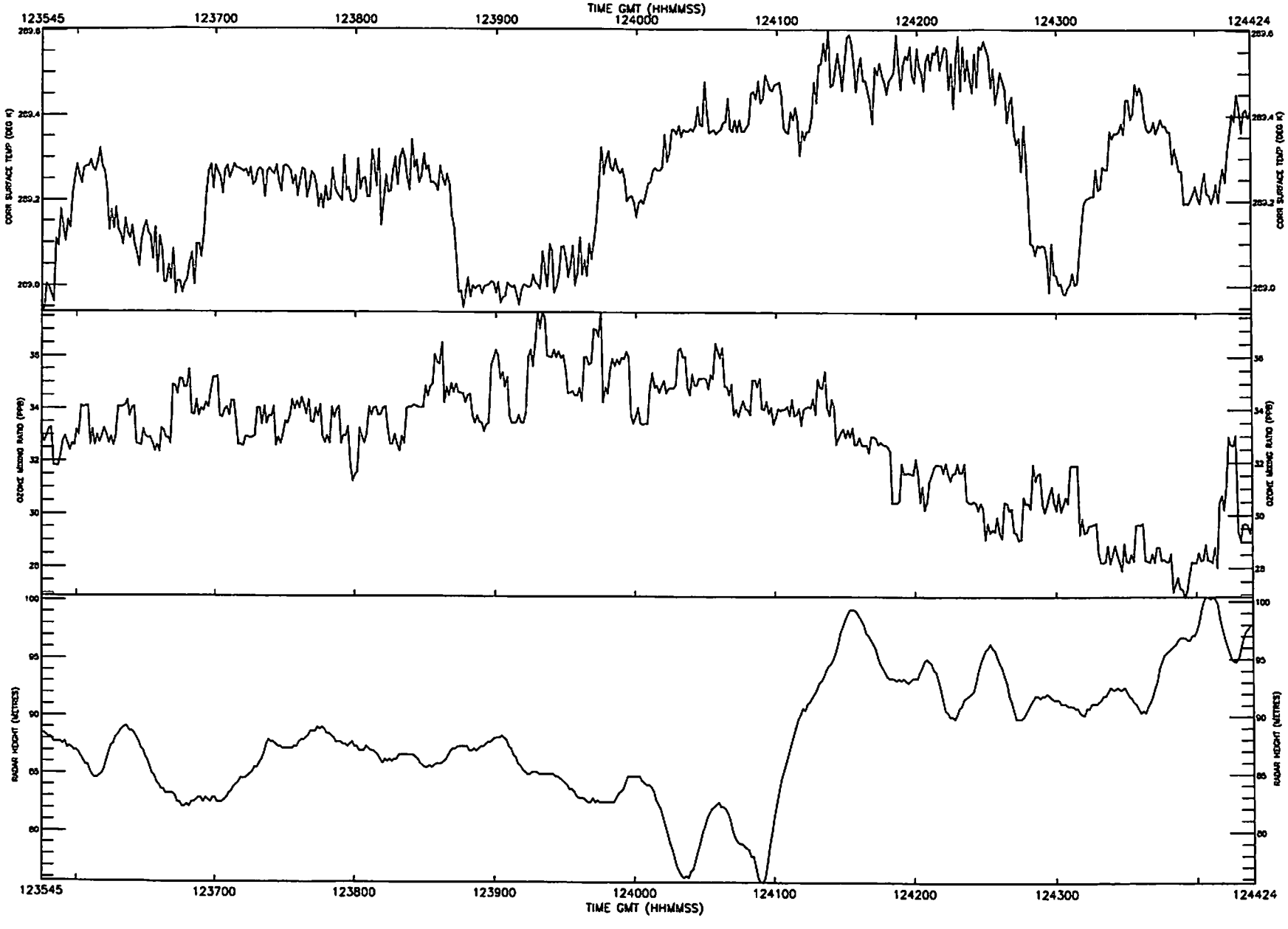
A503 15-DEC-96 R5 300' From 120840-123405 *Plotted 20-Jan-1997 16:00*



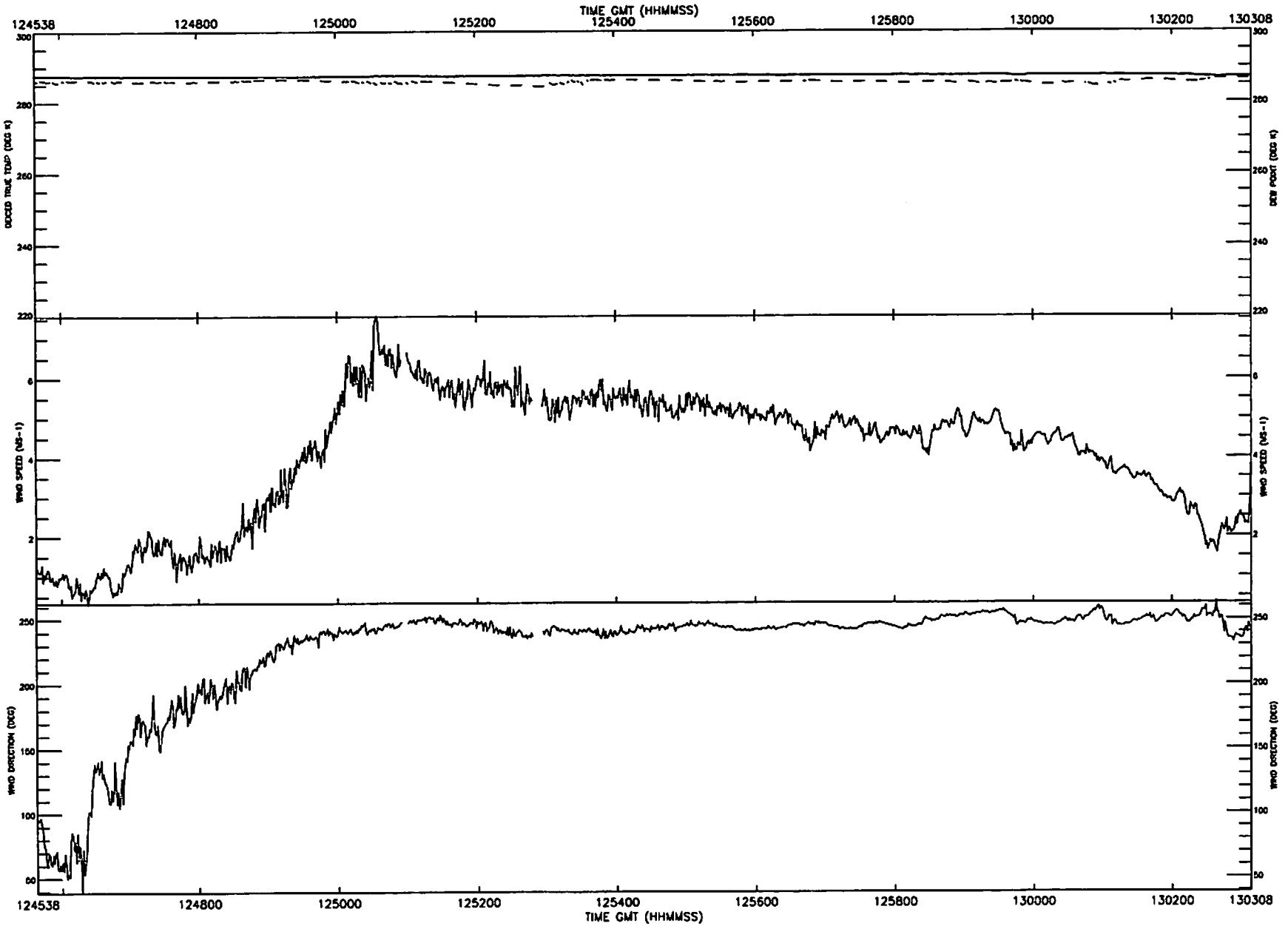
A503 15-DEC-96 R6 300' From 123545-124424 *Plotted 20-Jan-1997 16:02*



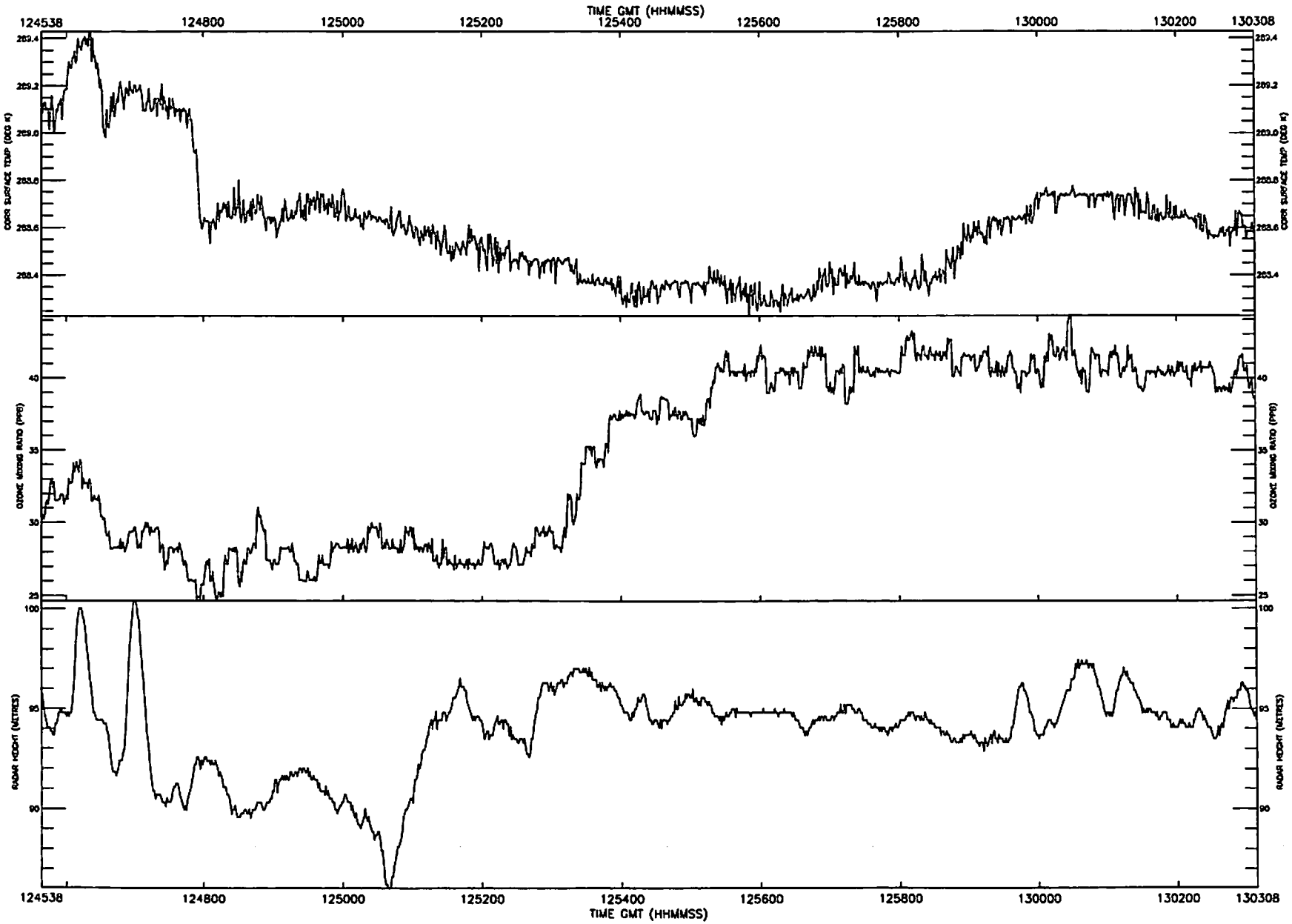
A503 15-DEC-96 R6 300' From 123545-124424 *Plotted 20-Jan-1997 16:02*



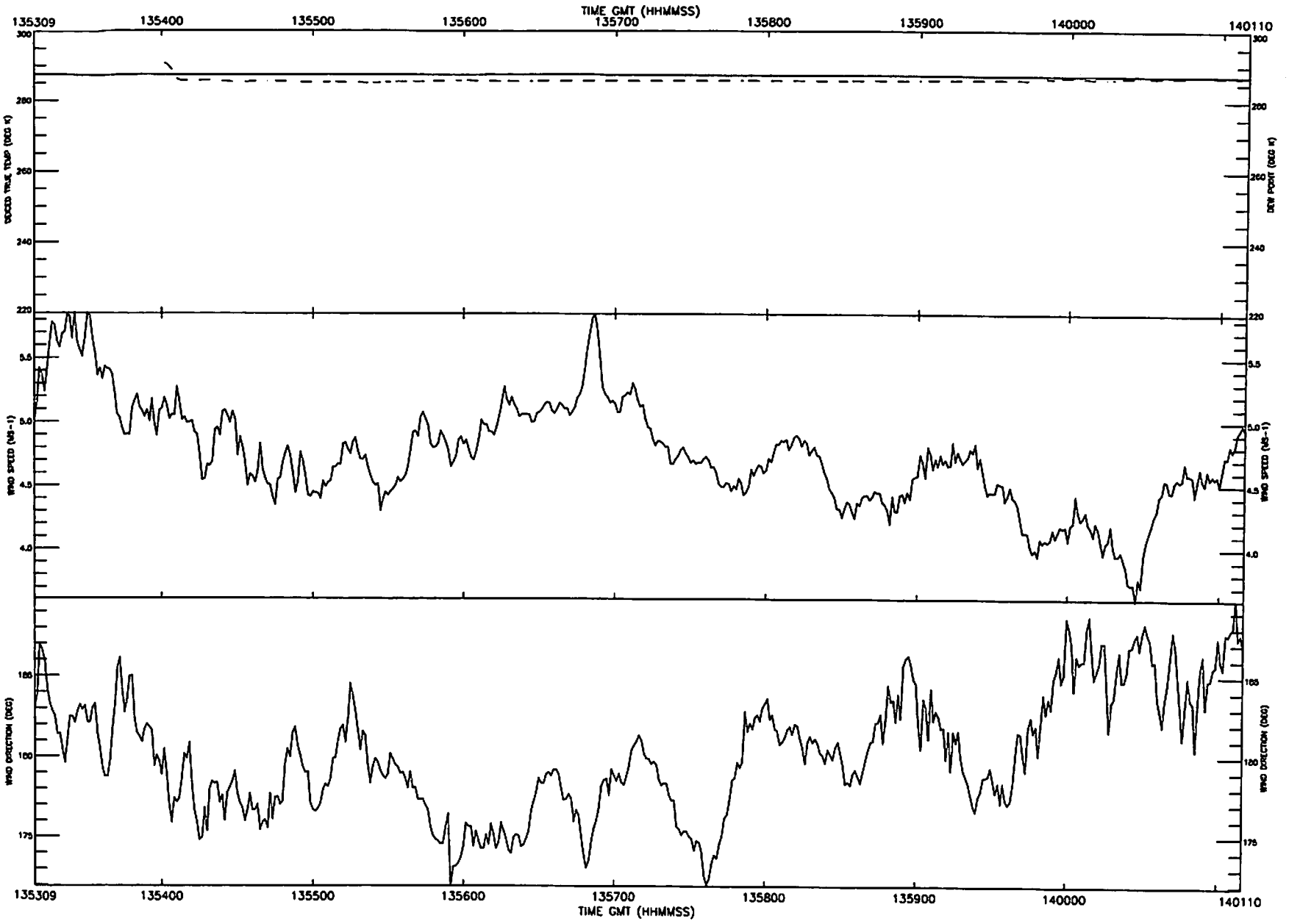
A503 15-DEC-96 R7 300' From 124538-130308 *Plotted 20-Jan-1997 16:05*



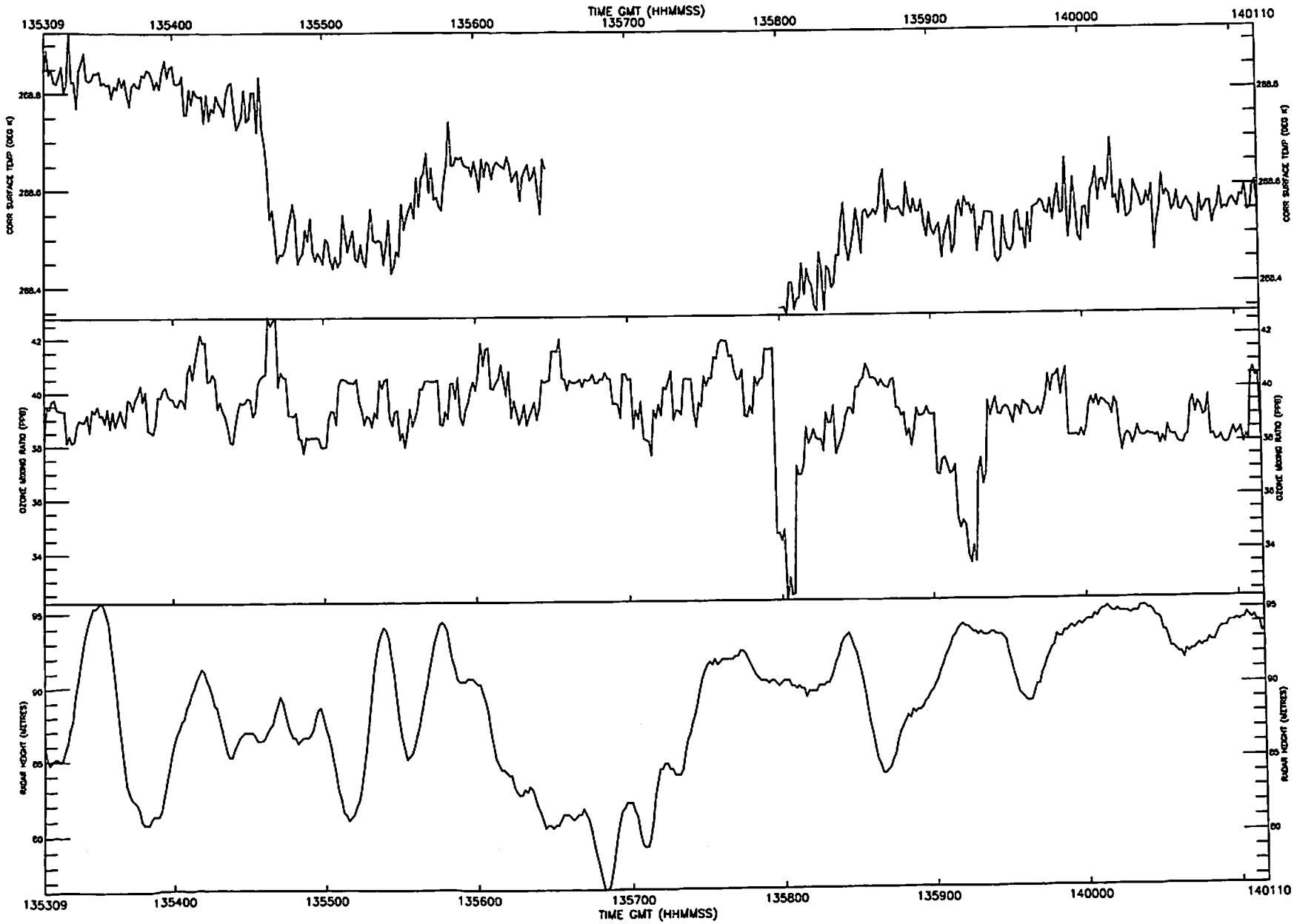
A503 15-DEC-96 R7 300' From 124538-130308 *Plotted 20-Jan-1997 16:05*



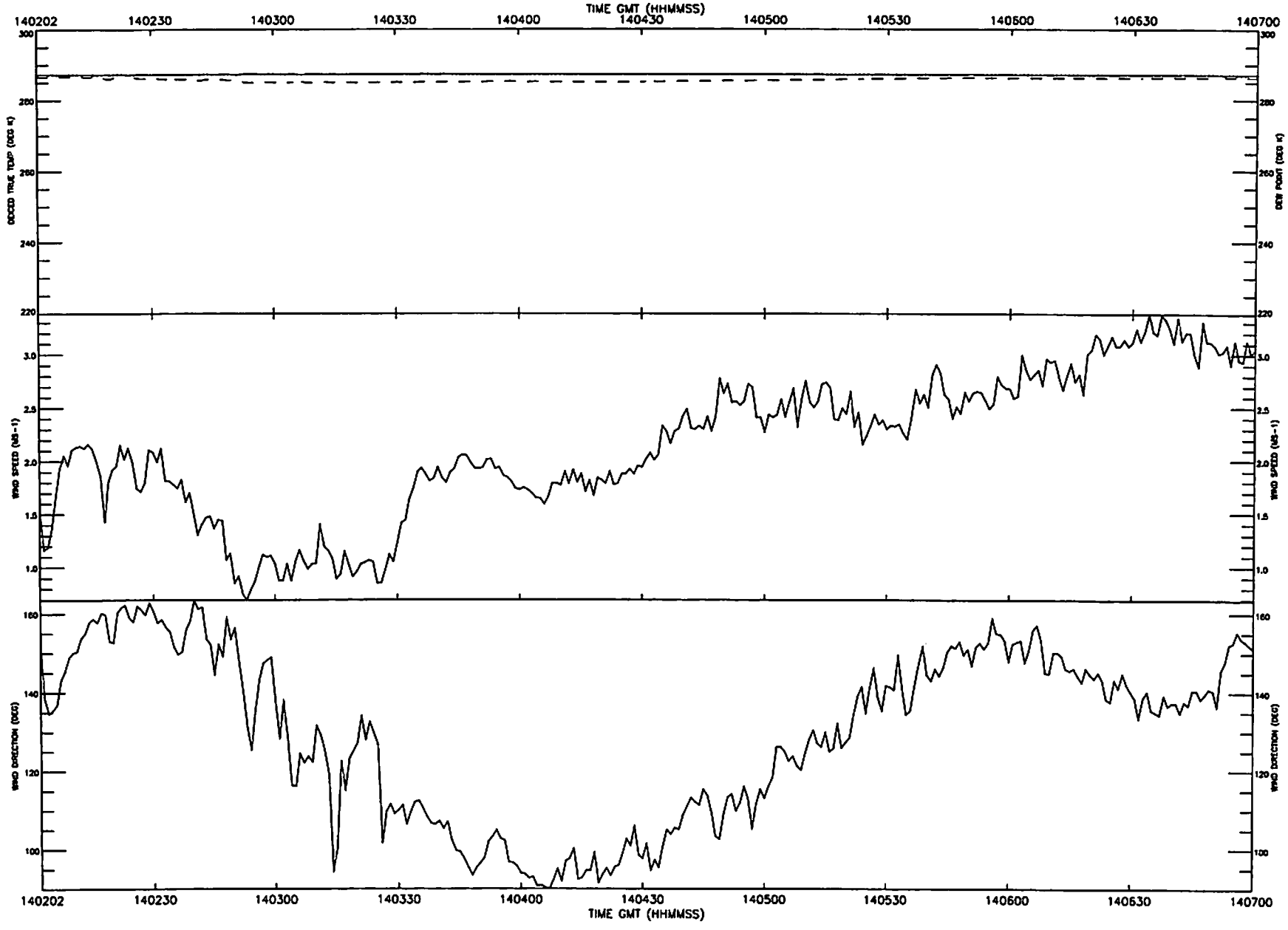
A503 15-DEC-96 R9 300' From 135309-140110 *Plotted 20-Jan-1997 16:10*



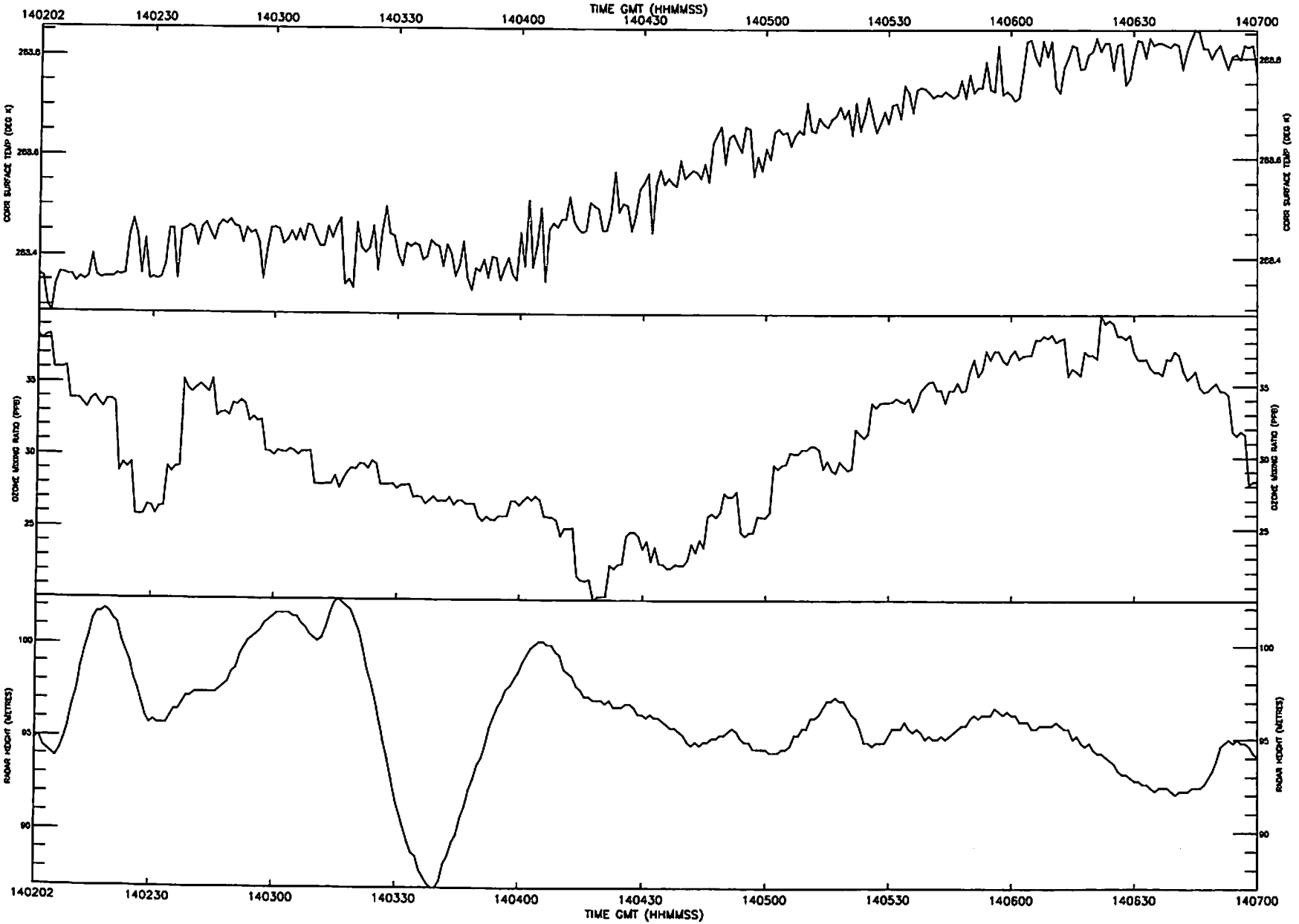
A503 15-DEC-96 R9 300' From 135309-140110 *Plotted 20-Jan-1997 16:10*



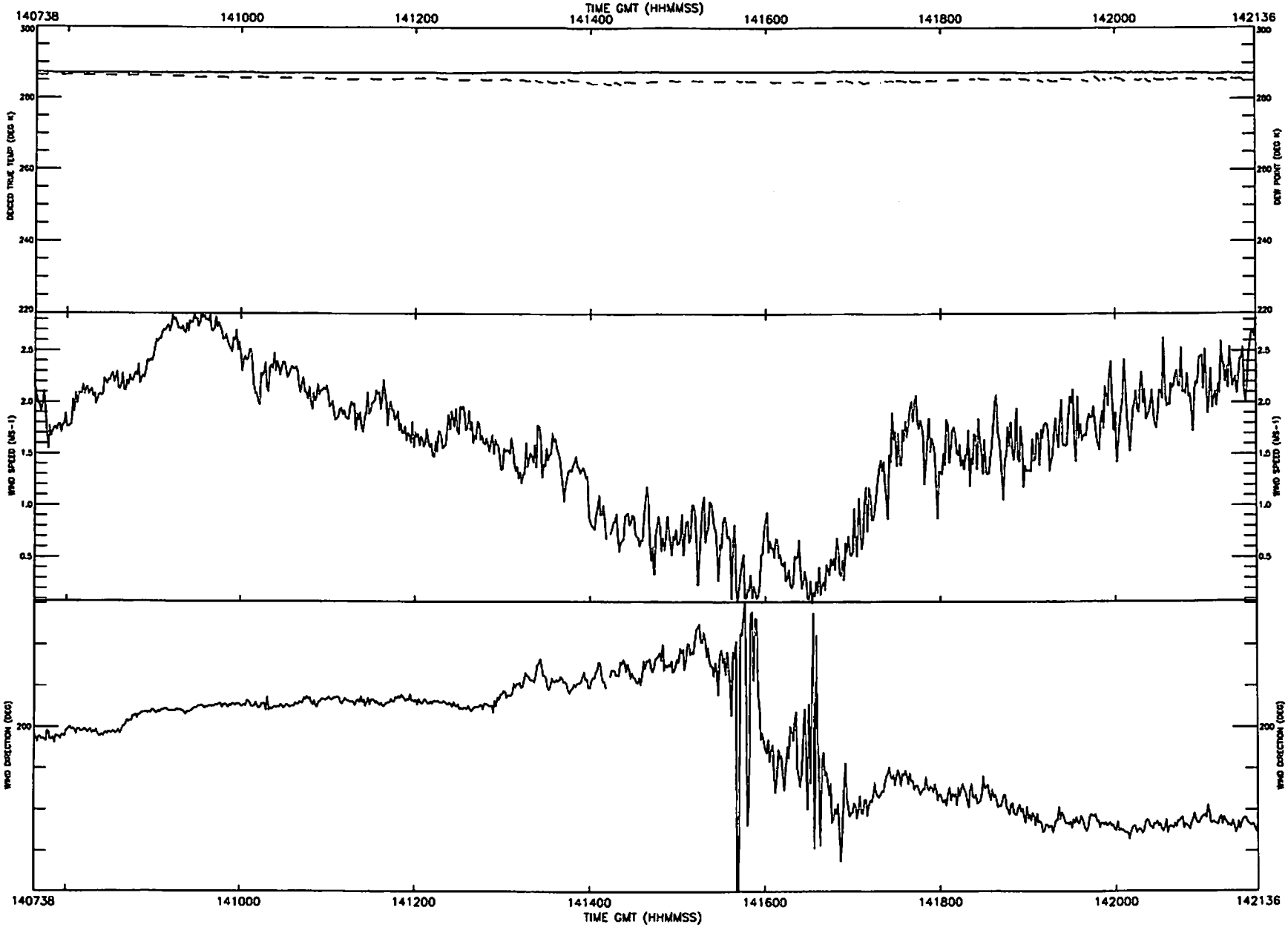
A503 15-DEC-96 R10 300' From 140202-140700 *Plotted 20-Jan-1997 16:11*



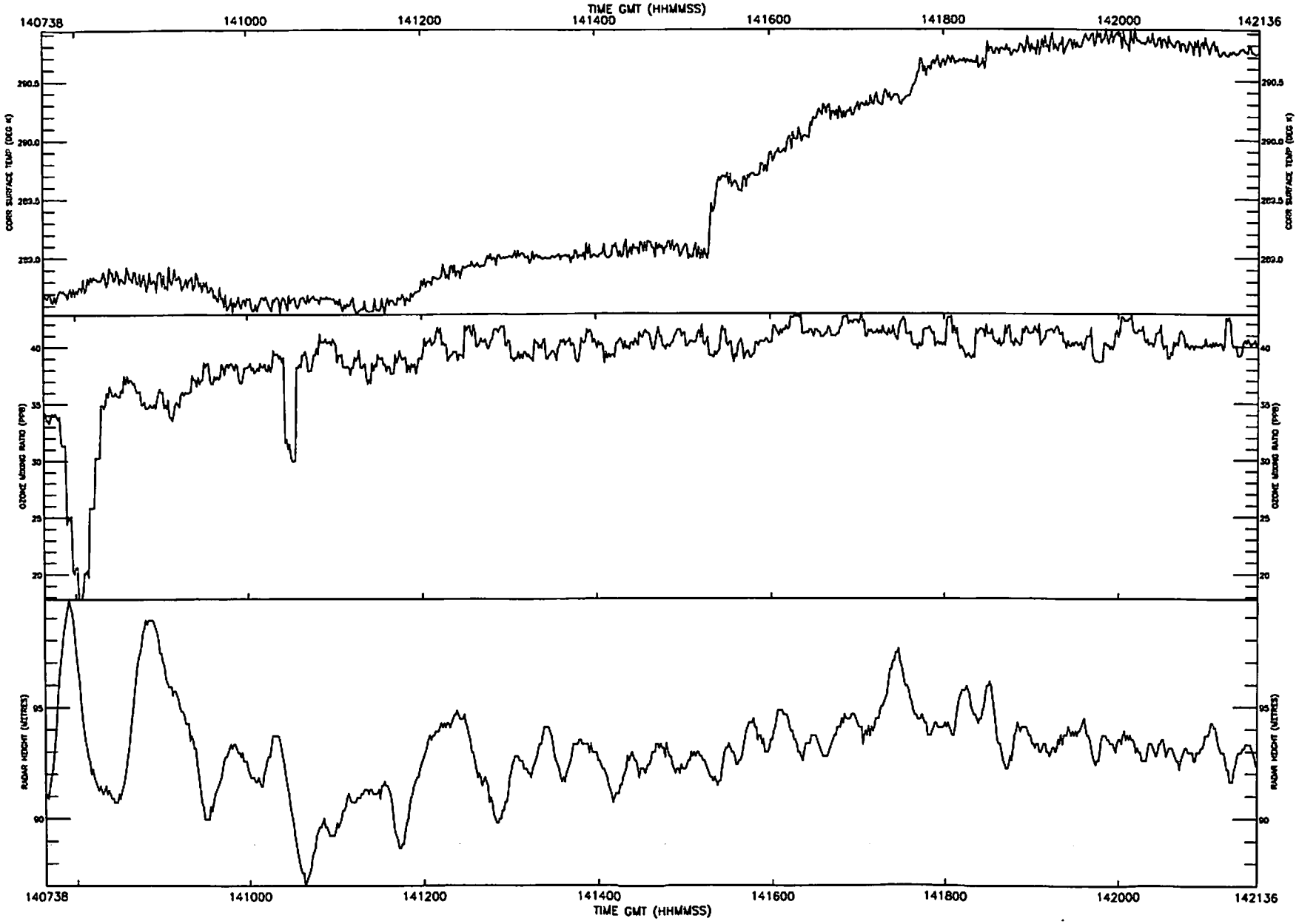
A503 15-DEC-96 R10 300' From 140202-140700 *Plotted 20-Jan-1997 16:11*



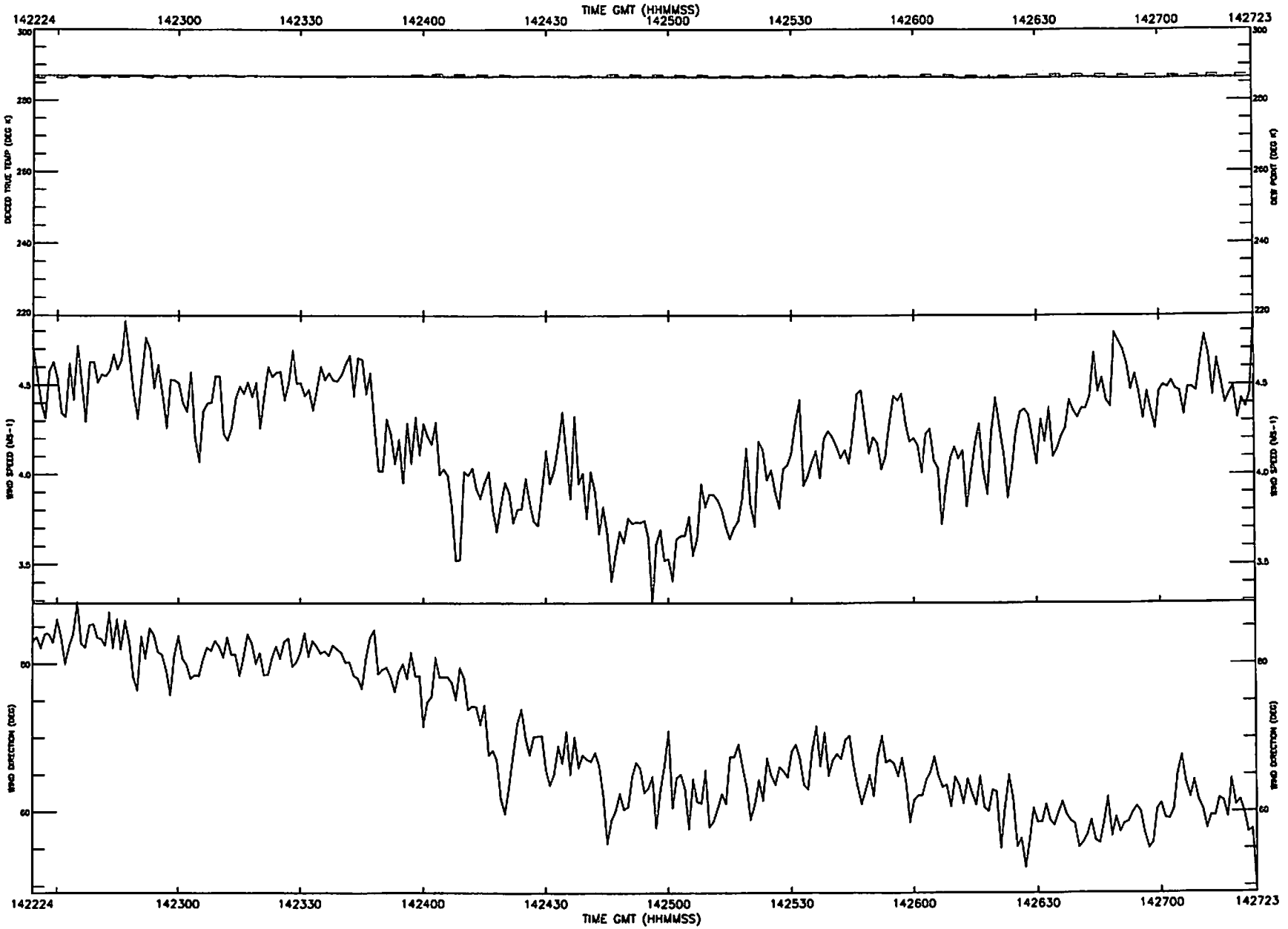
A503 15-DEC-96 R11 300' From 140738-142136 *Plotted 20-Jan-1997 16:13*



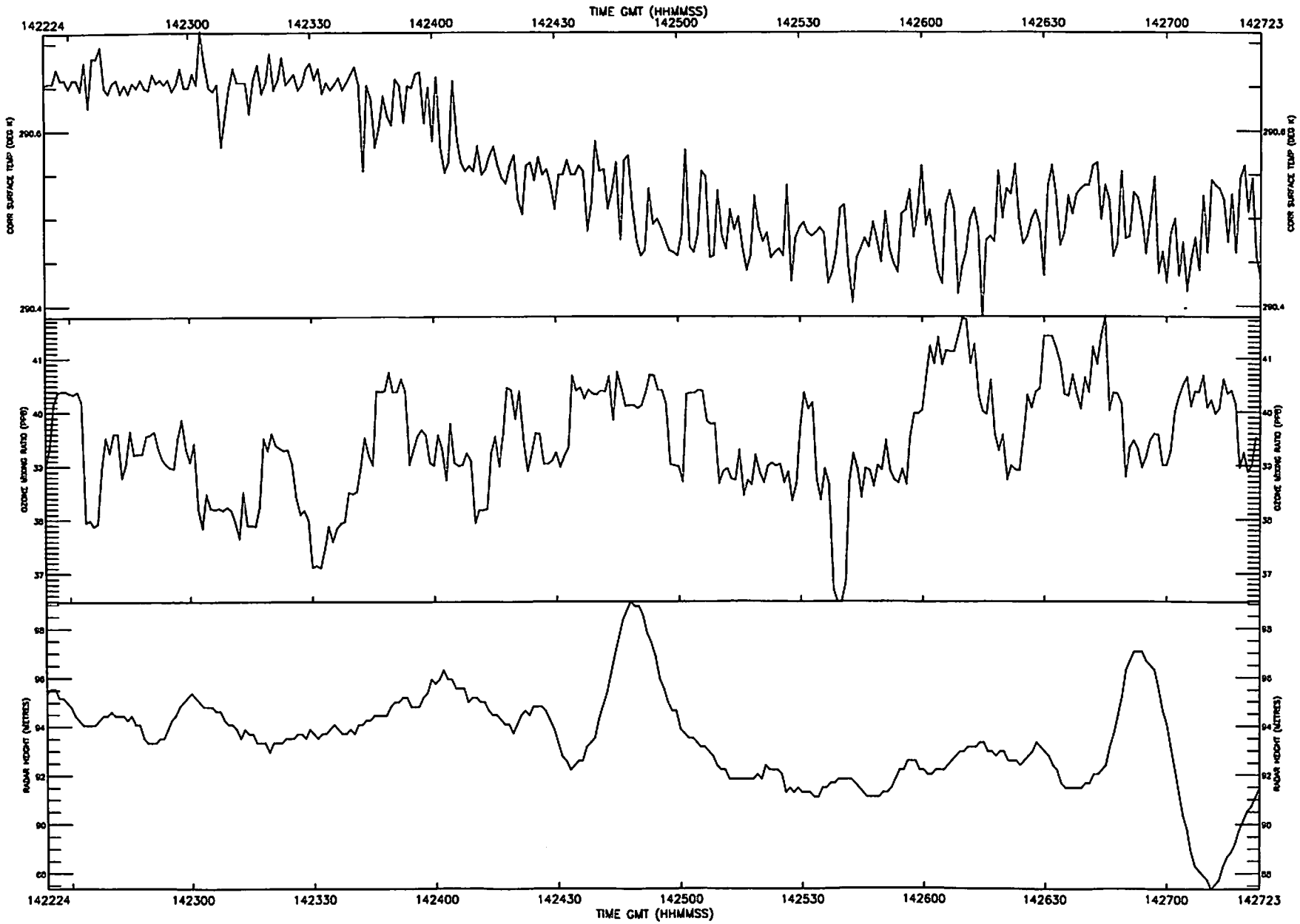
A503 15-DEC-96 R11 300' From 140738-142136 *Plotted 20-Jan-1997 16:13*



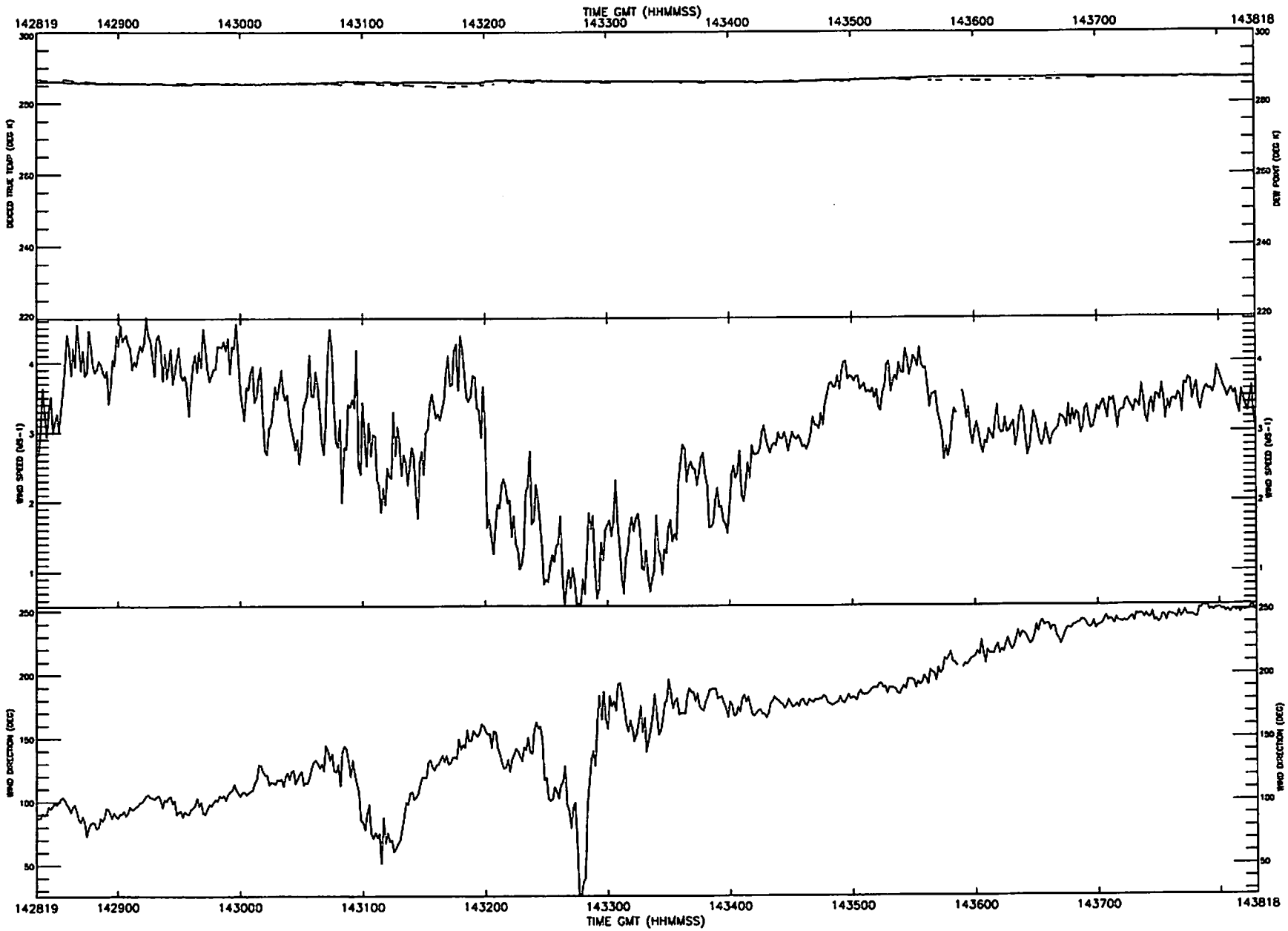
A503 15-DEC-96 R12 300' From 142224-142723 *Plotted 20-Jan-1997 16:15*



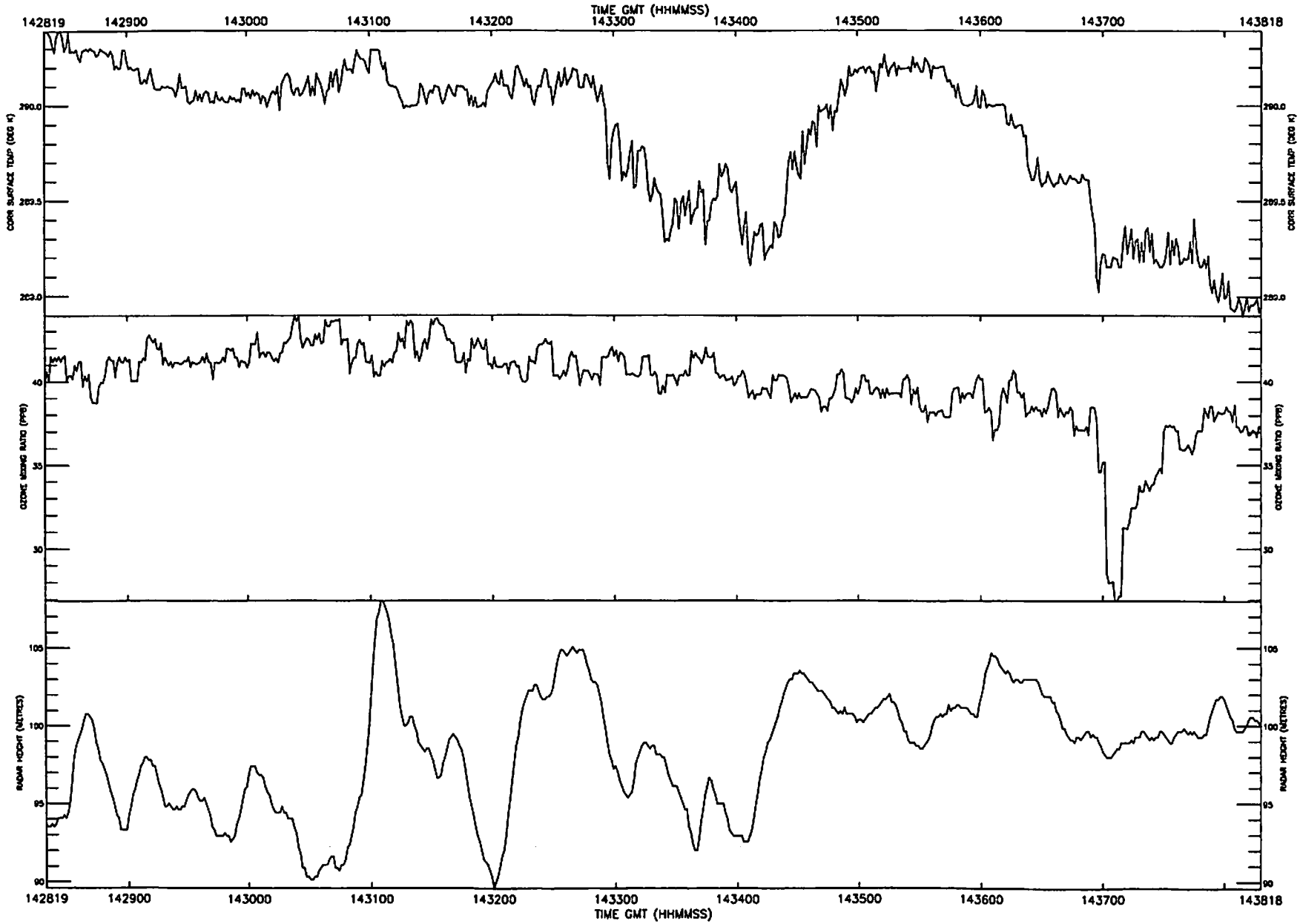
A503 15-DEC-96 R12 300' From 142224-142723 *Plotted 20-Jan-1997 16:15*



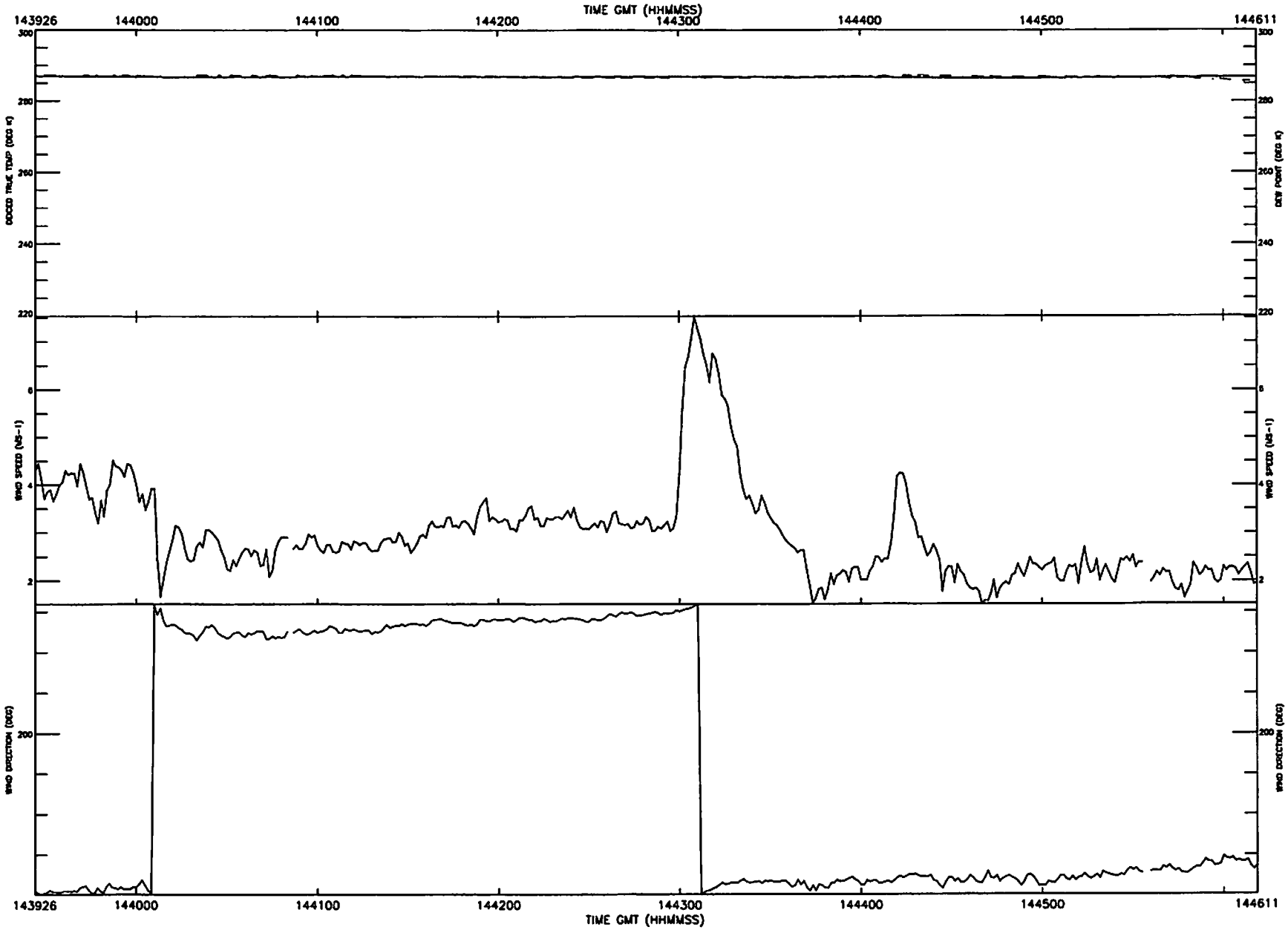
A503 15-DEC-96 R13 300' From 142819-143818 *Plotted 20-Jan-1997 16:16*



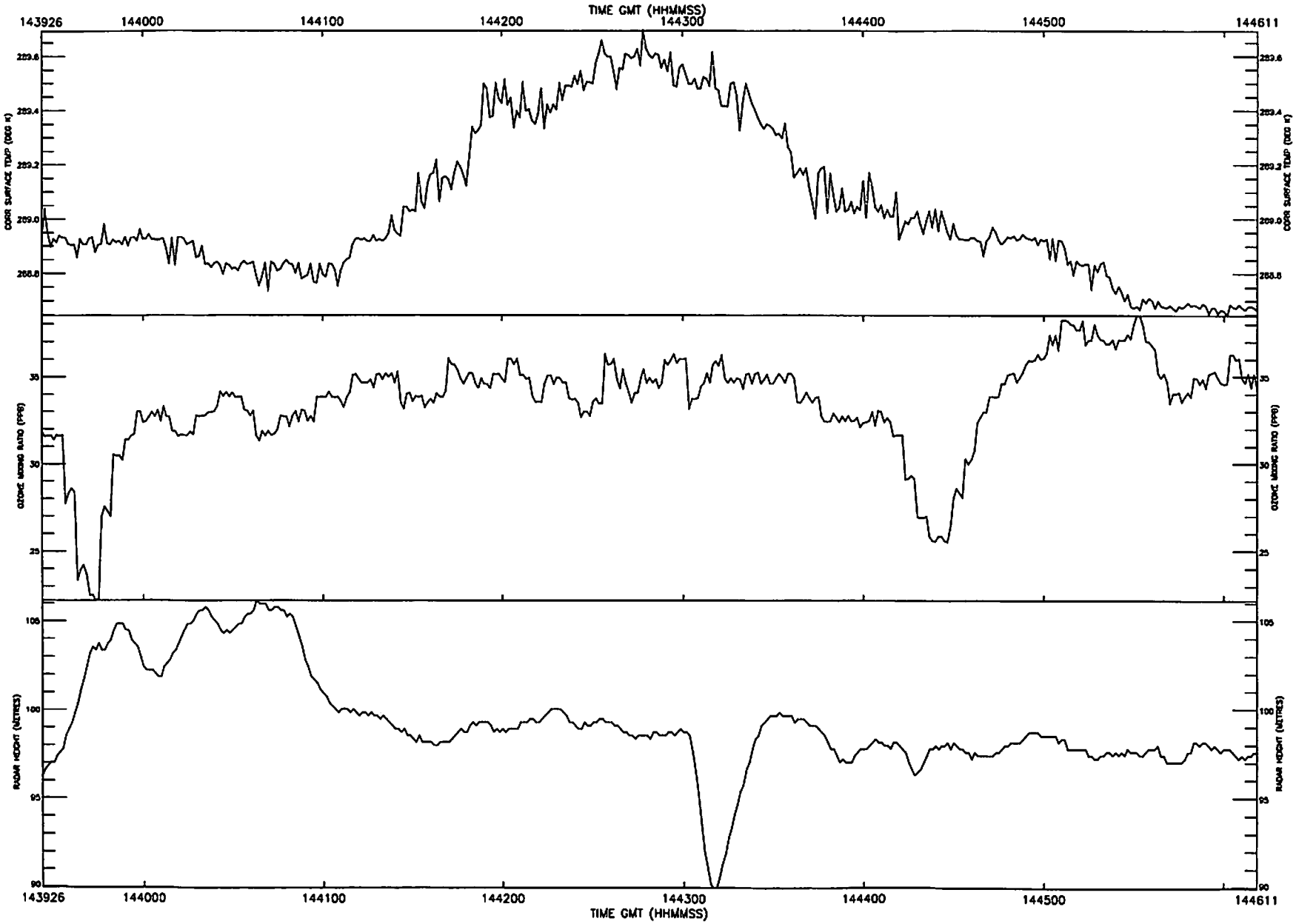
A503 15-DEC-96 R13 300' From 142819-143818 *Plotted 20-Jan-1997 16:17*



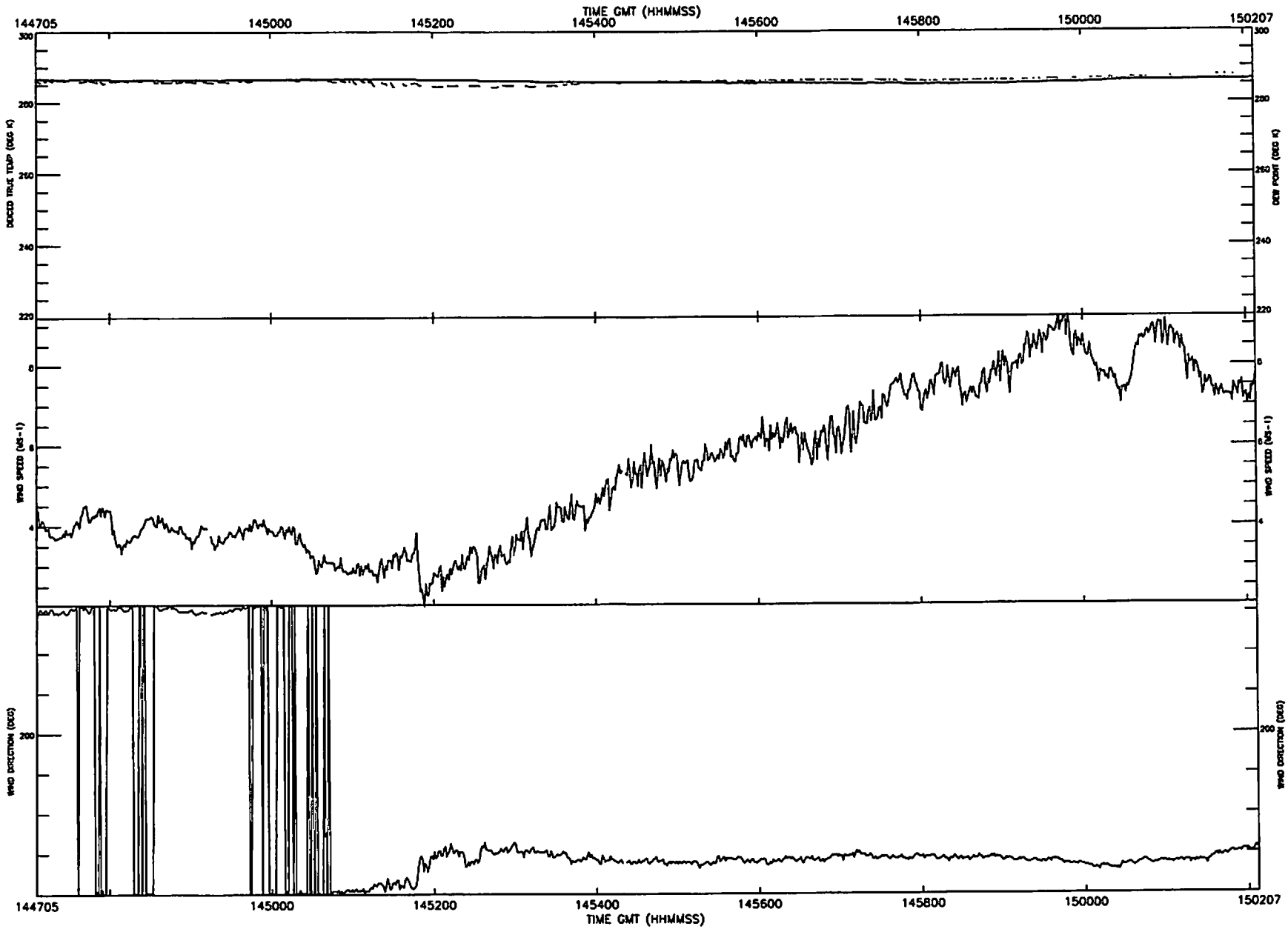
A503 15-DEC-96 R14 300' From 143926-144611 *Plotted 20-Jan-1997 16:18*



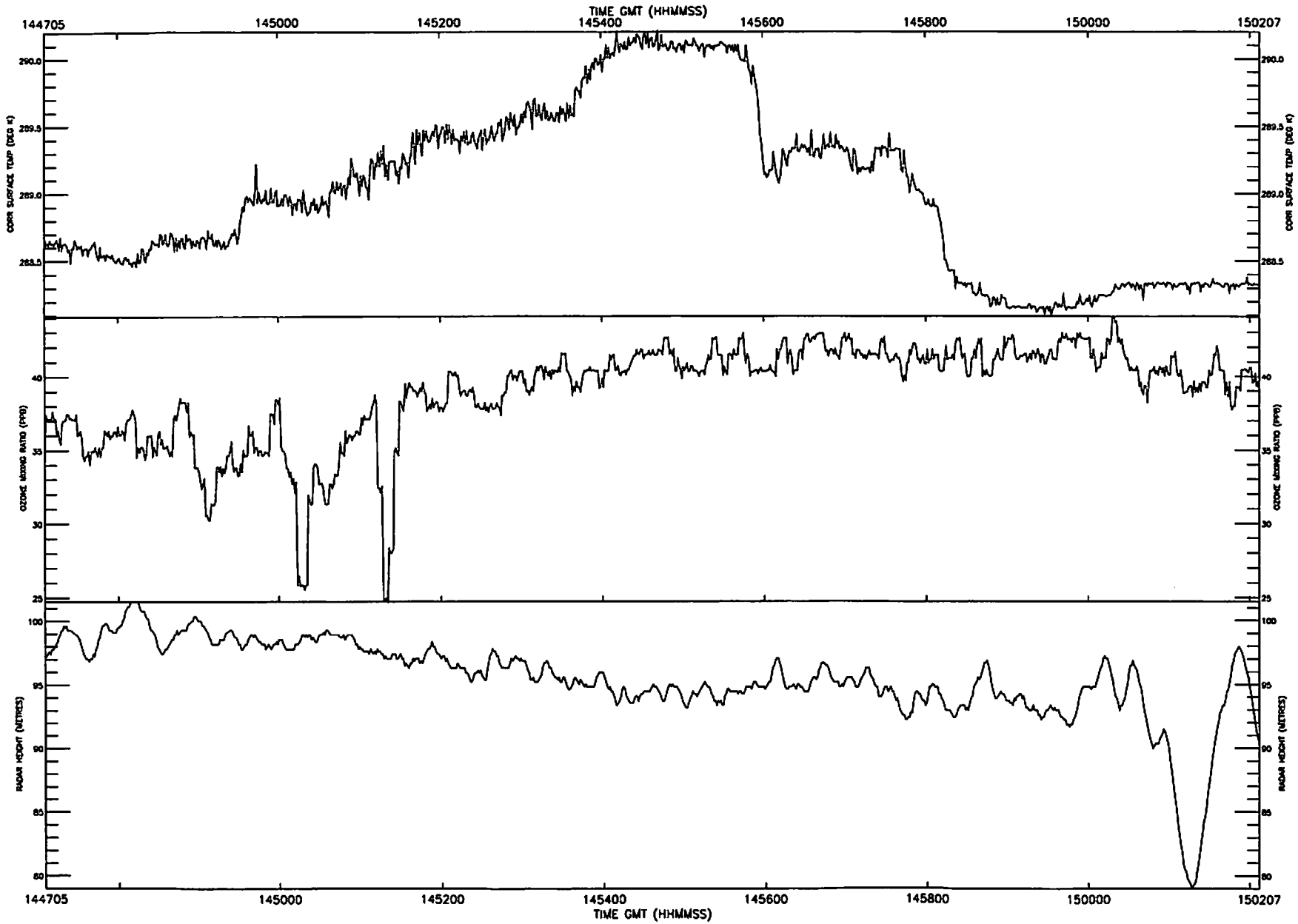
A503 15-DEC-96 R14 300' From 143926-144611 *Plotted 20-Jan-1997 16:18*



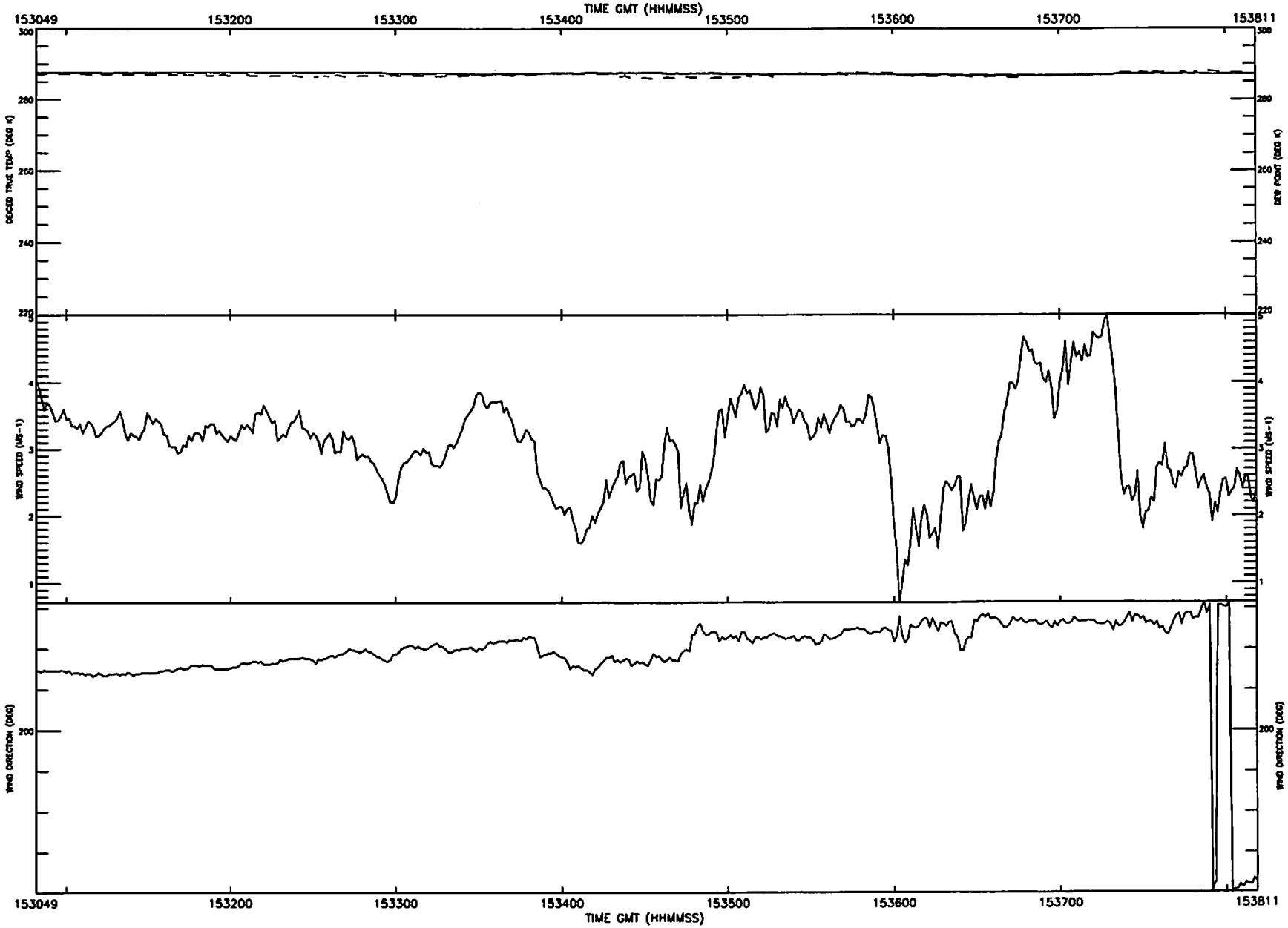
A503 15-DEC-96 R15 300' From 144705-150207 *Plotted 20-Jan-1997 16:20*



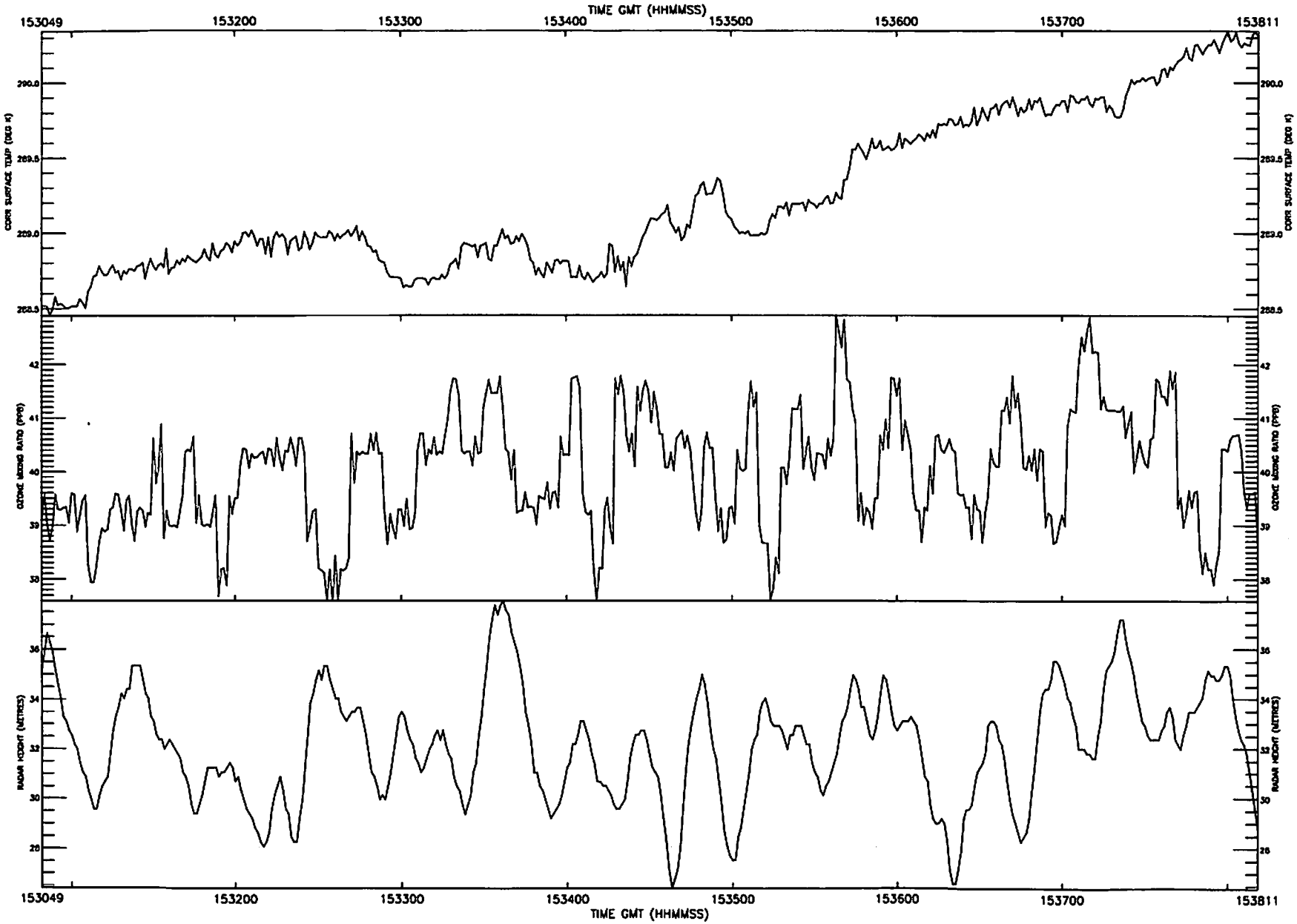
A503 15-DEC-96 R15 300' From 144705-150207 *Plotted 20-Jan-1997 16:20*



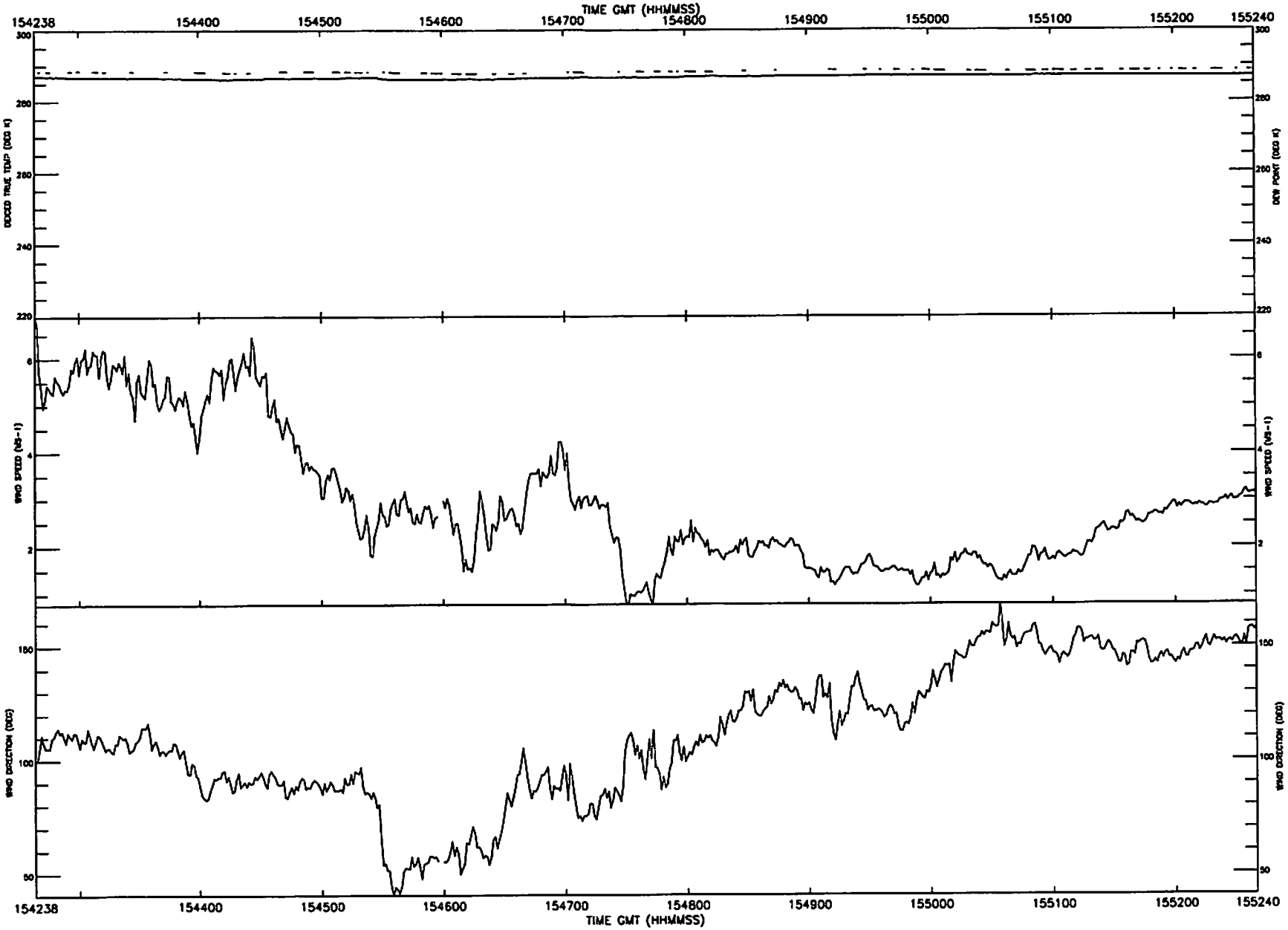
A503 15-DEC-96 R16 300' From 153049-153811 *Plotted 20-Jan-1997 16:22*



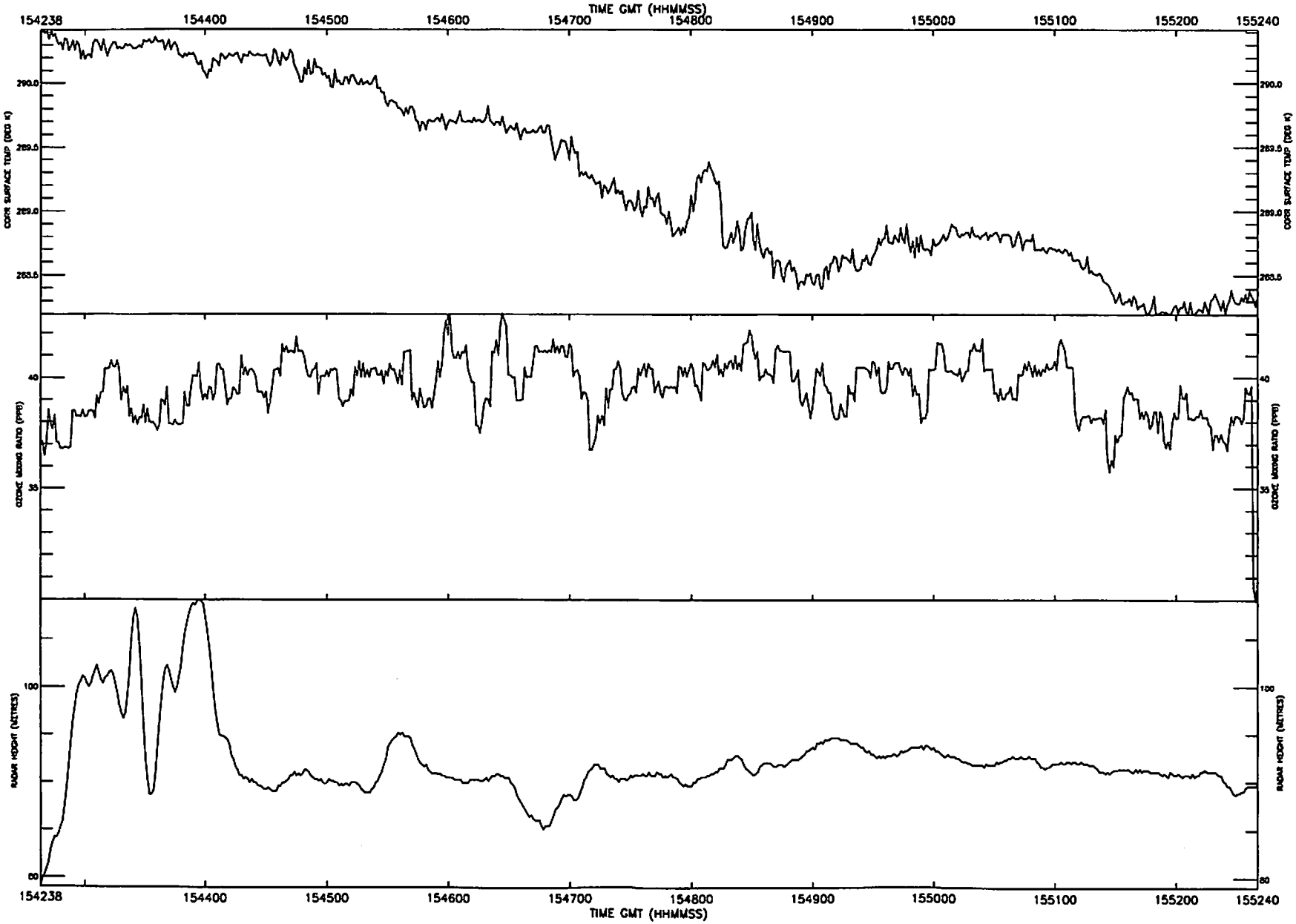
A503 15-DEC-96 R16 300' From 153049-153811 *Plotted 20-Jan-1997 16:22*



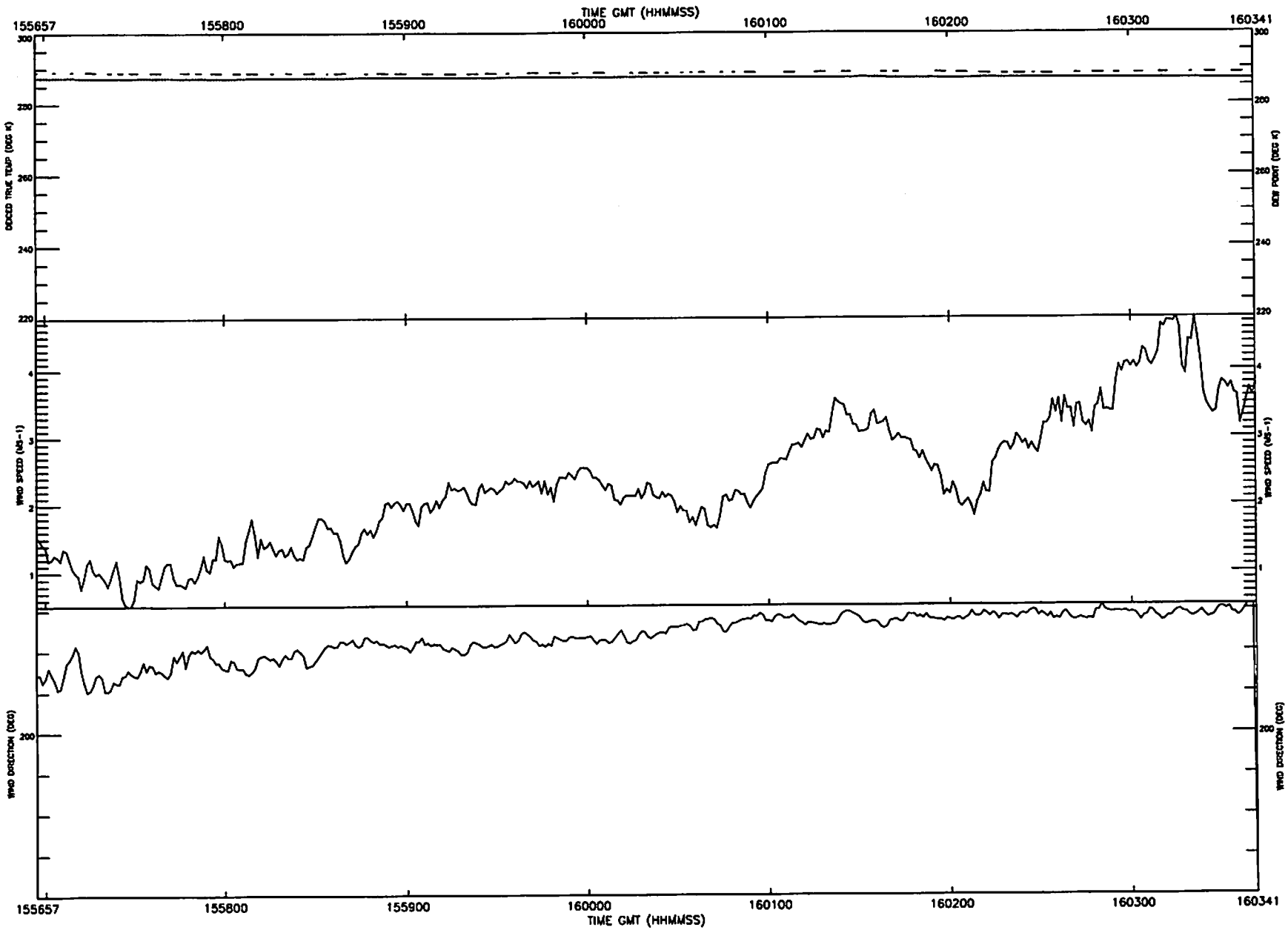
A503 15-DEC-96 R17 300' From 154238-155240 *Plotted 20-Jan-1997 16:23*



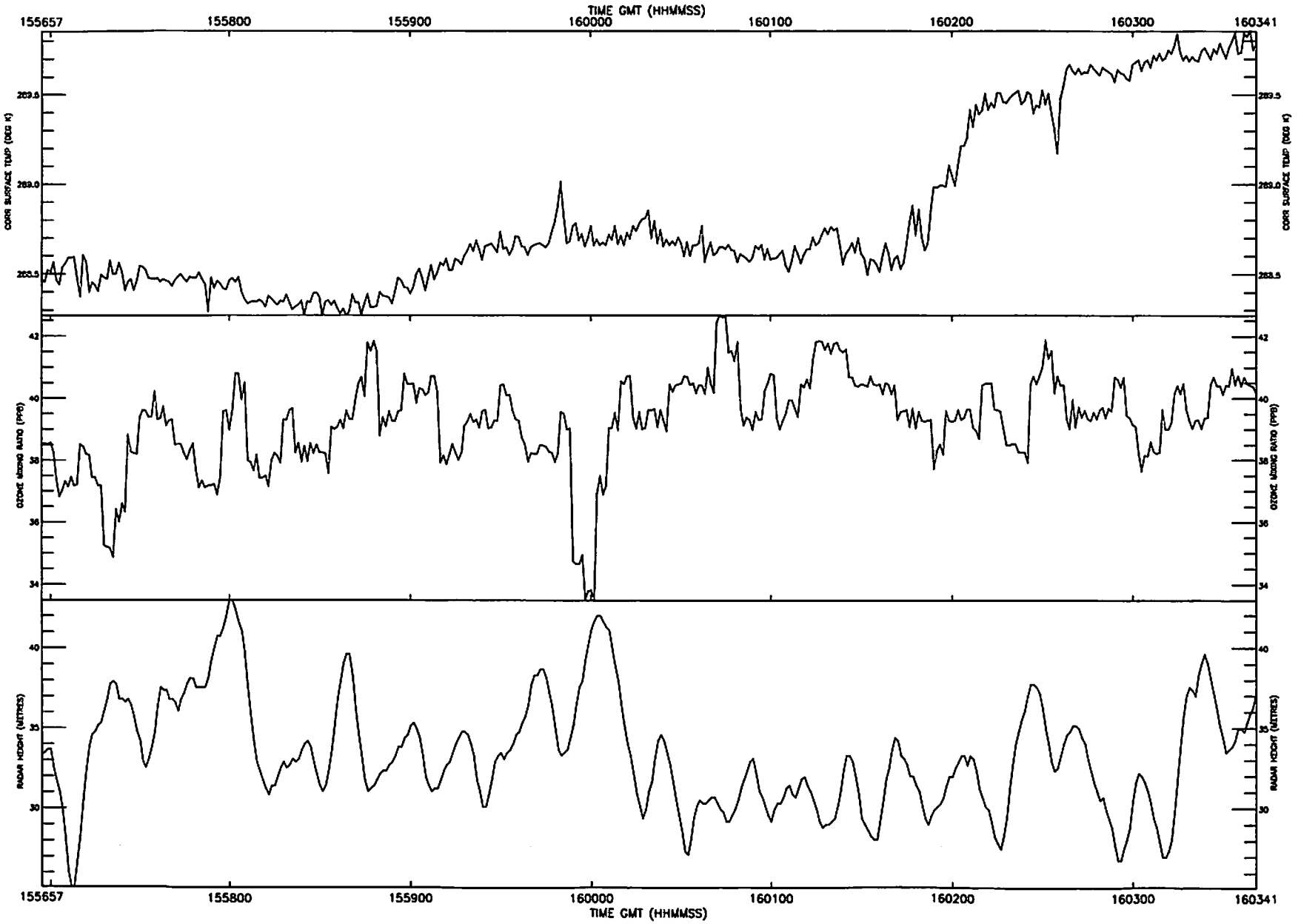
A503 15-DEC-96 R17 300' From 154238-155240 *Plotted 20-Jan-1997 16:23*



A503 15-DEC-96 R18 300' From 155657-160341 *Plotted 20-Jan-1997 16:25*



A503 15-DEC-96 R18 300' From 155657-160341 *Plotted 20-Jan-1997 16:25*



A503 15-DEC-96 R1 300' From 105113-112246 *Plotted 20-Jan-1997 15:49*

STATIC PRESSURE (MB)
No of obs 1894
Mean 1003.31
Standard dev 0.585441
Max value 1004.47
Min value 1001.08

DEICED TRUE TEMP (DEG K)
No of obs 1894
Mean 288.162
Standard dev 0.308368
Max value 288.707
Min value 287.544

DEW POINT (DEG K)
No of obs 1894
Mean 284.181
Standard dev 1.45277
Max value 287.124
Min value 282.336

OZONE MIXING RATIO (PPB)
No of obs 1894
Mean 32.3834
Standard dev 3.32833
Max value 38.3307
Min value 22.1201

CORR SURFACE TEMP (DEG K)
No of obs 1894
Mean 413.894
Standard dev 561.443
Max value 3292.10
Min value 289.044

POT TEMP (DEG K)
No of obs 1894
Mean 287.891
Standard dev 0.302215
Max value 288.398
Min value 287.233

RADAR HEIGHT (METRES)
No of obs 1894
Mean 94.1630
Standard dev 5.07618
Max value 112.275
Min value 83.6533

CORRECTED LATITUDE (DEGREES)
No of obs 1894
Mean 37.3814
Standard dev 0.375939
Max value 38.0205
Min value 36.7275

CORRECTED LONGITUDE (DEGREES)
No of obs 1894
Mean 0.144009
Standard dev 2.80512
Max value 0.818852
Min value -120.899

NORTHWARD WIND COMPT (M S-1)
No of obs 1894
Mean 1.45989
Standard dev 5.90830
Max value 8.84103
Min value -237.444

EASTWARD WIND COMPT (M S-1)
No of obs 1894
Mean -2.72406
Standard dev 4.24878
Max value 158.906
Min value -7.49901

VERTICAL WIND COMPT (M S-1)
No of obs 1894
Mean -14.9859
Standard dev 2.10626
Max value -13.2711
Min value -103.434

WIND SPEED (MS-1)
No of obs 1892
Mean 3.95950
Standard dev 1.93059
Max value 9.03534
Min value 0.854189

WIND DIRECTION (DEG)
Mean 118.188

TRUE AIR SPEED (M S-1)
No of obs 1894
Mean 93.7629
Standard dev 1.51630
Max value 97.6151
Min value 90.1342

HEADING (DEG)
Mean 322.368

A503 15-DEC-96 R2 300' From 112431-113404 *Plotted 20-Jan-1997 15:51*

STATIC PRESSURE (MB)
No of obs 574
Mean 1003.18
Standard dev 0.147776
Max value 1003.45
Min value 1002.65

DEICED TRUE TEMP (DEG K)
No of obs 574
Mean 287.134
Standard dev 0.323511
Max value 287.923
Min value 286.620

DEW POINT (DEG K)
No of obs 574
Mean 282.549
Standard dev 0.644483
Max value 283.730
Min value 280.326

OZONE MIXING RATIO (PPB)
No of obs 574
Mean 28.6111
Standard dev 2.19257
Max value 33.7962
Min value 23.5683

CORR SURFACE TEMP (DEG K)
No of obs 574
Mean 289.777
Standard dev 0.119273
Max value 290.015
Min value 289.439

POT TEMP (DEG K)
No of obs 574
Mean 286.874
Standard dev 0.330205
Max value 287.675
Min value 286.366

RADAR HEIGHT (METRES)
No of obs 574
Mean 94.2430
Standard dev 1.91818
Max value 100.566
Min value 91.0874

CORRECTED LATITUDE (DEGREES)
No of obs 574
Mean 37.7267
Standard dev 0.141330
Max value 37.9700
Min value 37.4825

CORRECTED LONGITUDE (DEGREES)
No of obs 574
Mean -0.583651
Standard dev 5.119098e-02
Max value -0.495327
Min value -0.674075

NORTHWARD WIND COMPT (M S-1)
No of obs 574
Mean -4.89805
Standard dev 0.889420
Max value -2.31173
Min value -6.75755

EASTWARD WIND COMPT (M S-1)
No of obs 574
Mean -0.445384
Standard dev 1.85073
Max value 1.72788
Min value -5.39525

VERTICAL WIND COMPT (M S-1)
No of obs 574
Mean -14.5220
Standard dev 0.367862
Max value -13.6549
Min value -15.5742

WIND SPEED (MS-1)
No of obs 574
Mean 5.29560
Standard dev 0.596150
Max value 6.79316
Min value 2.95699

WIND DIRECTION (DEG)
Mean 5.19568

TRUE AIR SPEED (M S-1)
No of obs 574
Mean 94.4330
Standard dev 0.855321
Max value 96.1146
Min value 91.9220

HEADING (DEG)
Mean 196.233

A503 15-DEC-96 R3 300' From 113457-115700 *Plotted 20-Jan-1997 15:54*

STATIC PRESSURE (MB)

No of obs	1324
Mean	1003.35
Standard dev	0.236998
Max value	1004.03
Min value	1002.89

DEICED TRUE TEMP (DEG K)

No of obs	1324
Mean	288.003
Standard dev	0.310909
Max value	288.482
Min value	287.106

DEW POINT (DEG K)

No of obs	1324
Mean	284.651
Standard dev	1.33091
Max value	287.167
Min value	282.044

OZONE MIXING RATIO (PPB)

No of obs	1324
Mean	33.2133
Standard dev	3.10939
Max value	38.5378
Min value	23.3604

CORR SURFACE TEMP (DEG K)

No of obs	1324
Mean	289.731
Standard dev	0.441920
Max value	290.536
Min value	288.621

POT TEMP (DEG K)

No of obs	1324
Mean	287.728
Standard dev	0.321105
Max value	288.221
Min value	286.818

RADAR HEIGHT (METRES)

No of obs	1324
Mean	90.1498
Standard dev	2.18155
Max value	94.0610
Min value	83.4674

CORRECTED LATITUDE (DEGREES)

No of obs	1324
Mean	36.9679
Standard dev	1.04790
Max value	37.4404
Min value	-7.241485e-03

CORRECTED LONGITUDE (DEGREES)

No of obs	1324
Mean	-0.111777
Standard dev	3.86069
Max value	139.935
Min value	-0.662025

NORTHWARD WIND COMPT (M S-1)

No of obs	1324
Mean	-2.64543
Standard dev	2.37541
Max value	0.465347
Min value	-53.5293

EASTWARD WIND COMPT (M S-1)

No of obs	1324
Mean	1.37970
Standard dev	3.99793
Max value	111.694
Min value	-1.74300

VERTICAL WIND COMPT (M S-1)

No of obs	1324
Mean	-14.5935
Standard dev	2.15630
Max value	62.0585
Min value	-15.9355

WIND SPEED (MS-1)

No of obs	1322
Mean	4.12685
Standard dev	1.38175
Max value	6.94004
Min value	0.903291

WIND DIRECTION (DEG)

Mean	332.456

TRUE AIR SPEED (M S-1)

No of obs	1324
Mean	93.8923
Standard dev	1.26467
Max value	96.3492
Min value	90.6845

HEADING (DEG)

Mean	141.305

A503 15-DEC-96 R4 300' From 115840-120751 *Plotted 20-Jan-1997 15:56*

STATIC PRESSURE (MB)
No of obs 552
Mean 1002.95
Standard dev 8.16779
Max value 1003.54
Min value 811.428

DEICED TRUE TEMP (DEG K)
No of obs 552
Mean 288.240
Standard dev 0.119867
Max value 288.396
Min value 287.963

DEW POINT (DEG K)
No of obs 552
Mean 286.148
Standard dev 0.575099
Max value 287.118
Min value 284.692

OZONE MIXING RATIO (PPB)
No of obs 552
Mean 40.3290
Standard dev 19.3330
Max value 493.090
Min value 34.5562

CORR SURFACE TEMP (DEG K)
No of obs 552
Mean 290.024
Standard dev 8.972626e-02
Max value 290.208
Min value 289.804

POT TEMP (DEG K)
No of obs 552
Mean 288.001
Standard dev 0.775558
Max value 305.963
Min value 287.684

PRESSURE HEIGHT (METRES)
No of obs 552
Mean 86.2812
Standard dev 73.8699
Max value 1818.49
Min value 81.1205

CORRECTED LATITUDE (DEGREES)
No of obs 552
Mean 36.3415
Standard dev 1.14033
Max value 36.4974
Min value 9.63924

CORRECTED LONGITUDE (DEGREES)
No of obs 552
Mean -3.584277e-02
Standard dev 0.658560
Max value 15.0743
Min value -0.293822

NORTHWARD WIND COMPT (M S-1)
No of obs 552
Mean 2.85938
Standard dev 5.35722
Max value 127.726
Min value 0.828728

EASTWARD WIND COMPT (M S-1)
No of obs 552
Mean 3.86695
Standard dev 1.08217
Max value 4.89127
Min value -19.8025

VERTICAL WIND COMPT (M S-1)
No of obs 552
Mean -14.3872
Standard dev 1.19042
Max value 12.6023
Min value -15.2363

WIND SPEED (MS-1)
No of obs 550
Mean 4.75109
Standard dev 0.392046
Max value 5.65755
Min value 3.49940

WIND DIRECTION (DEG)
Mean 233.519

TRUE AIR SPEED (M S-1)
No of obs 552
Mean 93.9090
Standard dev 0.449079
Max value 95.1244
Min value 92.4961

HEADING (DEG)
Mean 239.587

A503 15-DEC-96 R5 300' From 120840-123405 *Plotted 20-Jan-1997 16:00*

STATIC PRESSURE (MB)

No of obs	1526
Mean	1003.38
Standard dev	0.209545
Max value	1004.17
Min value	1002.89

DEICED TRUE TEMP (DEG K)

No of obs	1526
Mean	288.008
Standard dev	0.165690
Max value	288.589
Min value	287.658

DEW POINT (DEG K)

No of obs	1526
Mean	285.098
Standard dev	1.76766
Max value	287.718
Min value	280.545

OZONE MIXING RATIO (PPB)

No of obs	1526
Mean	36.1566
Standard dev	3.35790
Max value	42.0648
Min value	18.7755

CORR SURFACE TEMP (DEG K)

No of obs	1526
Mean	444.543
Standard dev	625.055
Max value	3292.10
Min value	72.5054

POT TEMP (DEG K)

No of obs	1526
Mean	287.731
Standard dev	0.162608
Max value	288.309
Min value	287.366

RADAR HEIGHT (METRES)

No of obs	1526
Mean	87.3834
Standard dev	2.79675
Max value	94.2469
Min value	79.9362

CORRECTED LATITUDE (DEGREES)

No of obs	1526
Mean	36.7852
Standard dev	0.750485
Max value	37.3261
Min value	9.86757

CORRECTED LONGITUDE (DEGREES)

No of obs	1526
Mean	-0.807518
Standard dev	0.505182
Max value	15.4383
Min value	-1.30805

NORTHWARD WIND COMPT (M S-1)

No of obs	1526
Mean	2.08197
Standard dev	2.17469
Max value	40.0773
Min value	-1.76398

EASTWARD WIND COMPT (M S-1)

No of obs	1526
Mean	-0.769461
Standard dev	3.56719
Max value	6.24933
Min value	-6.29549

VERTICAL WIND COMPT (M S-1)

No of obs	1526
Mean	-14.2679
Standard dev	0.383524
Max value	-12.9387
Min value	-15.5903

WIND SPEED (MS-1)

No of obs	1525
Mean	4.29845
Standard dev	1.68235
Max value	7.14739
Min value	0.119090

WIND DIRECTION (DEG)

Mean	159.717

TRUE AIR SPEED (M S-1)

No of obs	1526
Mean	93.7323
Standard dev	0.972685
Max value	95.9531
Min value	91.3625

HEADING (DEG)

Mean	323.103

A503 15-DEC-96 R6 300' From 123545-124424 *Plotted 20-Jan-1997 16:02*

STATIC PRESSURE (MB)
No of obs 520
Mean 1002.92
Standard dev 0.693551
Max value 1004.34
Min value 1001.17

DEICED TRUE TEMP (DEG K)
No of obs 520
Mean 287.823
Standard dev 0.259692
Max value 288.269
Min value 287.263

DEW POINT (DEG K)
No of obs 520
Mean 283.757
Standard dev 1.12973
Max value 288.075
Min value 280.107

OZONE MIXING RATIO (PPB)
No of obs 520
Mean 32.8385
Standard dev 2.30282
Max value 37.6752
Min value 26.9158

CORR SURFACE TEMP (DEG K)
No of obs 520
Mean 289.267
Standard dev 0.167088
Max value 289.603
Min value 288.939

POT TEMP (DEG K)
No of obs 520
Mean 287.583
Standard dev 0.222258
Max value 288.014
Min value 287.156

RADAR HEIGHT (METRES)
No of obs 520
Mean 88.1352
Standard dev 5.32705
Max value 100.380
Min value 75.6617

CORRECTED LATITUDE (DEGREES)
No of obs 520
Mean 37.1085
Standard dev 0.106133
Max value 37.2921
Min value 36.9260

CORRECTED LONGITUDE (DEGREES)
No of obs 520
Mean -1.56164
Standard dev 0.100333
Max value -1.38983
Min value -1.73805

NORTHWARD WIND COMPT (M S-1)
No of obs 520
Mean -4.33222
Standard dev 1.27620
Max value -1.16910
Min value -7.06178

EASTWARD WIND COMPT (M S-1)
No of obs 520
Mean -3.06763
Standard dev 0.631606
Max value -1.28253
Min value -4.75206

VERTICAL WIND COMPT (M S-1)
No of obs 520
Mean -13.9133
Standard dev 0.513377
Max value -11.3895
Min value -15.2346

WIND SPEED (MS-1)
No of obs 520
Mean 5.43162
Standard dev 0.837304
Max value 7.67058
Min value 3.92213

WIND DIRECTION (DEG)
Mean 35.3022

TRUE AIR SPEED (M S-1)
No of obs 520
Mean 93.9429
Standard dev 1.09076
Max value 96.1445
Min value 91.3969

HEADING (DEG)
Mean 217.307

A503 15-DEC-96 R7 300' From 124538-130308 *Plotted 20-Jan-1997 16:05*

STATIC PRESSURE (MB)

No of obs	1051
Mean	1002.11
Standard dev	0.232107
Max value	1002.88
Min value	1001.10

DEICED TRUE TEMP (DEG K)

No of obs	1051
Mean	287.445
Standard dev	0.126858
Max value	287.685
Min value	286.886

DEW POINT (DEG K)

No of obs	1051
Mean	285.728
Standard dev	0.503057
Max value	286.632
Min value	284.030

OZONE MIXING RATIO (PPB)

No of obs	1051
Mean	34.8803
Standard dev	5.99283
Max value	44.2896
Min value	24.6270

CORR SURFACE TEMP (DEG K)

No of obs	1051
Mean	288.607
Standard dev	0.257430
Max value	289.429
Min value	288.229

POT TEMP (DEG K)

No of obs	1051
Mean	287.272
Standard dev	0.131806
Max value	287.532
Min value	286.694

RADAR HEIGHT (METRES)

No of obs	1051
Mean	93.9141
Standard dev	2.24717
Max value	100.380
Min value	86.0694

CORRECTED LATITUDE (DEGREES)

No of obs	1051
Mean	36.2091
Standard dev	3.37255
Max value	36.8725
Min value	4.637946e-03

CORRECTED LONGITUDE (DEGREES)

No of obs	1051
Mean	-1.36780
Standard dev	0.227875
Max value	-1.528084e-03
Min value	-1.71675

NORTHWARD WIND COMPT (M S-1)

No of obs	1043
Mean	1.82274
Standard dev	0.788585
Max value	3.76358
Min value	-0.682282

EASTWARD WIND COMPT (M S-1)

No of obs	1043
Mean	3.41201
Standard dev	1.97328
Max value	6.79781
Min value	-1.29607

VERTICAL WIND COMPT (M S-1)

No of obs	1043
Mean	-13.8437
Standard dev	0.401395
Max value	-12.7316
Min value	-14.9799

WIND SPEED (MS-1)

No of obs	1039
Mean	4.08715
Standard dev	1.64441
Max value	7.56461
Min value	0.330149

WIND DIRECTION (DEG)

Mean	241.888

TRUE AIR SPEED (M S-1)

No of obs	1051
Mean	93.8951
Standard dev	1.18010
Max value	96.9589
Min value	91.6862

HEADING (DEG)

Mean	143.341

A503 15-DEC-96 R9 300' From 135309-140110 *Plotted 20-Jan-1997 16:10*

STATIC PRESSURE (MB)
No of obs 482
Mean 1001.94
Standard dev 0.528890
Max value 1003.31
Min value 1001.19

DEICED TRUE TEMP (DEG K)
No of obs 482
Mean 287.424
Standard dev 7.965665e-02
Max value 287.568
Min value 287.247

DEW POINT (DEG K)
No of obs 482
Mean 288.008
Standard dev 5.93412
Max value 308.160
Min value 285.100

OZONE MIXING RATIO (PPB)
No of obs 482
Mean 39.2569
Standard dev 1.47358
Max value 42.8062
Min value 32.2117

CORR SURFACE TEMP (DEG K)
No of obs 482
Mean 773.482
Standard dev 1027.68
Max value 3292.06
Min value 288.339

POT TEMP (DEG K)
No of obs 482
Mean 287.265
Standard dev 5.155768e-02
Max value 287.363
Min value 287.129

RADAR HEIGHT (METRES)
No of obs 482
Mean 88.6944
Standard dev 4.58971
Max value 95.7337
Min value 76.4051

CORRECTED LATITUDE (DEGREES)
No of obs 482
Mean 36.4394
Standard dev 0.108827
Max value 36.6267
Min value 36.2509

CORRECTED LONGITUDE (DEGREES)
No of obs 482
Mean -1.39166
Standard dev 6.982874e-02
Max value -1.27094
Min value -1.51200

NORTHWARD WIND COMPT (M S-1)
No of obs 482
Mean 4.72706
Standard dev 0.409446
Max value 5.84452
Min value 3.57893

EASTWARD WIND COMPT (M S-1)
No of obs 482
Mean 3.749499e-03
Standard dev 0.303286
Max value 0.835983
Min value -0.673439

VERTICAL WIND COMPT (M S-1)
No of obs 482
Mean -12.9592
Standard dev 0.746778
Max value -10.8427
Min value -14.5089

WIND SPEED (MS-1)
No of obs 482
Mean 4.73689
Standard dev 0.407959
Max value 5.84851
Min value 3.60881

WIND DIRECTION (DEG)
Mean 180.045

TRUE AIR SPEED (M S-1)
No of obs 482
Mean 94.1533
Standard dev 1.04162
Max value 96.4059
Min value 91.7994

HEADING (DEG)
Mean 27.4006

A503 15-DEC-96 R10 300' From 140202-140700 *Plotted 20-Jan-1997 16:11*

STATIC PRESSURE (MB)
No of obs 299
Mean 1000.95
Standard dev 0.331451
Max value 1002.14
Min value 1000.30

DEICED TRUE TEMP (DEG K)
No of obs 299
Mean 287.216
Standard dev 4.792011e-02
Max value 287.336
Min value 287.120

DEW POINT (DEG K)
No of obs 299
Mean 285.719
Standard dev 0.582137
Max value 286.753
Min value 284.897

OZONE MIXING RATIO (PPB)
No of obs 299
Mean 30.6918
Standard dev 4.90323
Max value 39.8946
Min value 20.0858

CORR SURFACE TEMP (DEG K)
No of obs 299
Mean 288.572
Standard dev 0.167607
Max value 288.856
Min value 288.288

POT TEMP (DEG K)
No of obs 299
Mean 287.139
Standard dev 4.550963e-02
Max value 287.285
Min value 287.054

RADAR HEIGHT (METRES)
No of obs 299
Mean 96.0010
Standard dev 3.05742
Max value 102.424
Min value 86.9986

CORRECTED LATITUDE (DEGREES)
No of obs 299
Mean 36.6542
Standard dev 2.694804e-03
Max value 36.6580
Min value 36.6501

CORRECTED LONGITUDE (DEGREES)
No of obs 299
Mean -1.45201
Standard dev 9.183170e-02
Max value -1.29387
Min value -1.60959

NORTHWARD WIND COMPT (M S-1)
No of obs 299
Mean 1.32714
Standard dev 0.843348
Max value 2.78510
Min value 9.231567e-04

EASTWARD WIND COMPT (M S-1)
No of obs 299
Mean -1.49683
Standard dev 0.568052
Max value -0.340828
Min value -2.70609

VERTICAL WIND COMPT (M S-1)
No of obs 299
Mean -13.0508
Standard dev 0.426353
Max value -12.1525
Min value -14.2879

WIND SPEED (MS-1)
No of obs 299
Mean 2.14020
Standard dev 0.673280
Max value 3.38311
Min value 0.693513

WIND DIRECTION (DEG)
Mean 131.561

TRUE AIR SPEED (M S-1)
No of obs 299
Mean 94.0117
Standard dev 1.33684
Max value 96.8655
Min value 91.5490

HEADING (DEG)
Mean 268.312

A503 15-DEC-96 R11 300' From 140738-142136 *Plotted 20-Jan-1997 16:14*

STATIC PRESSURE (MB)
No of obs 839
Mean 1001.04
Standard dev 0.247134
Max value 1001.63
Min value 1000.29

DEICED TRUE TEMP (DEG K)
No of obs 839
Mean 287.392
Standard dev 0.167243
Max value 287.682
Min value 287.072

DEW POINT (DEG K)
No of obs 839
Mean 285.406
Standard dev 0.562292
Max value 286.551
Min value 284.030

OZONE MIXING RATIO (PPB)
No of obs 839
Mean 39.0975
Standard dev 3.53547
Max value 42.8550
Min value 17.8315

CORR SURFACE TEMP (DEG K)
No of obs 839
Mean 289.580
Standard dev 0.882227
Max value 290.932
Min value 288.527

POT TEMP (DEG K)
No of obs 839
Mean 287.307
Standard dev 0.169444
Max value 287.589
Min value 286.990

RADAR HEIGHT (METRES)
No of obs 839
Mean 93.0637
Standard dev 1.91261
Max value 99.8224
Min value 86.9986

CORRECTED LATITUDE (DEGREES)
No of obs 839
Mean 36.3246
Standard dev 0.179821
Max value 36.6326
Min value 36.0111

CORRECTED LONGITUDE (DEGREES)
No of obs 839
Mean -1.98741
Standard dev 4.25774
Max value -1.63979
Min value -125.122

NORTHWARD WIND COMPT (M S-1)
No of obs 839
Mean 0.772288
Standard dev 2.47622
Max value 68.4802
Min value -0.752296

EASTWARD WIND COMPT (M S-1)
No of obs 839
Mean 5.784149e-02
Standard dev 2.72827
Max value 2.07508
Min value -67.8511

VERTICAL WIND COMPT (M S-1)
No of obs 839
Mean -12.5704
Standard dev 1.88471
Max value 40.8904
Min value -14.0956

WIND SPEED (MS-1)
No of obs 837
Mean 1.62245
Standard dev 0.676128
Max value 2.86119
Min value 7.771850e-02

WIND DIRECTION (DEG)
Mean 184.283

TRUE AIR SPEED (M S-1)
No of obs 839
Mean 94.4576
Standard dev 1.08721
Max value 97.6841
Min value 91.4072

HEADING (DEG)
Mean 207.969

A503 15-DEC-96 R12 300' From 142224-142723 *Plotted 20-Jan-1997 16:15*

STATIC PRESSURE (MB)
No of obs 300
Mean 1001.10
Standard dev 0.290179
Max value 1001.84
Min value 1000.50

DEICED TRUE TEMP (DEG K)
No of obs 300
Mean 286.729
Standard dev 0.209072
Max value 287.049
Min value 286.335

DEW POINT (DEG K)
No of obs 300
Mean 287.011
Standard dev 0.259652
Max value 287.475
Min value 286.340

OZONE MIXING RATIO (PPB)
No of obs 300
Mean 39.4629
Standard dev 0.991149
Max value 41.7646
Min value 36.4783

CORR SURFACE TEMP (DEG K)
No of obs 300
Mean 290.552
Standard dev 7.935572e-02
Max value 290.712
Min value 290.388

POT TEMP (DEG K)
No of obs 300
Mean 286.640
Standard dev 0.226249
Max value 286.982
Min value 286.198

RADAR HEIGHT (METRES)
No of obs 300
Mean 93.4043
Standard dev 1.98583
Max value 99.0790
Min value 87.3703

CORRECTED LATITUDE (DEGREES)
No of obs 300
Mean 35.9832
Standard dev 2.549387e-03
Max value 35.9879
Min value 35.9784

CORRECTED LONGITUDE (DEGREES)
No of obs 300
Mean -2.24674
Standard dev 9.404190e-02
Max value -2.08463
Min value -2.40911

NORTHWARD WIND COMPT (M S-1)
No of obs 300
Mean -1.43312
Standard dev 0.648599
Max value -0.149551
Min value -3.20058

EASTWARD WIND COMPT (M S-1)
No of obs 300
Mean -3.90186
Standard dev 0.421931
Max value -2.92313
Min value -4.83660

VERTICAL WIND COMPT (M S-1)
No of obs 300
Mean -12.6020
Standard dev 0.369592
Max value -11.4660
Min value -13.9661

WIND SPEED (MS-1)
No of obs 300
Mean 4.21561
Standard dev 0.322594
Max value 4.88795
Min value 3.28737

WIND DIRECTION (DEG)
Mean 69.8322

TRUE AIR SPEED (M S-1)
No of obs 300
Mean 94.6100
Standard dev 0.818610
Max value 96.8789
Min value 92.5632

HEADING (DEG)
Mean 267.944

A503 15-DEC-96 R13 300' From 142819-143818 *Plotted 20-Jan-1997 16:17*

STATIC PRESSURE (MB)
No of obs 600
Mean 1001.25
Standard dev 0.411406
Max value 1002.37
Min value 1000.07

DEICED TRUE TEMP (DEG K)
No of obs 600
Mean 286.285
Standard dev 0.581588
Max value 287.228
Min value 285.265

DEW POINT (DEG K)
No of obs 600
Mean 286.003
Standard dev 0.519579
Max value 286.964
Min value 284.606

OZONE MIXING RATIO (PPB)
No of obs 600
Mean 39.8366
Standard dev 2.57135
Max value 43.9413
Min value 26.9239

CORR SURFACE TEMP (DEG K)
No of obs 600
Mean 289.854
Standard dev 0.386685
Max value 290.392
Min value 288.899

POT TEMP (DEG K)
No of obs 600
Mean 286.182
Standard dev 0.588125
Max value 287.116
Min value 285.165

RADAR HEIGHT (METRES)
No of obs 600
Mean 98.3319
Standard dev 3.77082
Max value 108.000
Min value 89.6006

CORRECTED LATITUDE (DEGREES)
No of obs 600
Mean 36.2334
Standard dev 0.128845
Max value 36.4567
Min value 36.0113

CORRECTED LONGITUDE (DEGREES)
No of obs 600
Mean -2.49356
Standard dev 5.05373
Max value -2.13100
Min value -126.059

NORTHWARD WIND COMPT (M S-1)
No of obs 600
Mean 2.15326
Standard dev 13.1240
Max value 321.835
Min value -1.61360

EASTWARD WIND COMPT (M S-1)
No of obs 600
Mean -1.240985e-02
Standard dev 13.7889
Max value 332.054
Min value -4.53834

VERTICAL WIND COMPT (M S-1)
No of obs 600
Mean -12.7412
Standard dev 2.25365
Max value -10.4287
Min value -65.8284

WIND SPEED (MS-1)
No of obs 598
Mean 3.03255
Standard dev 0.909666
Max value 4.63389
Min value 0.516490

WIND DIRECTION (DEG)
Mean 179.670

TRUE AIR SPEED (M S-1)
No of obs 600
Mean 93.5445
Standard dev 1.47288
Max value 96.5925
Min value 89.0089

HEADING (DEG)
Mean 28.9380

A503 15-DEC-96 R14 300' From 143926-144611 *Plotted 20-Jan-1997 16:18*

STATIC PRESSURE (MB)
No of obs 406
Mean 1001.21
Standard dev 0.291440
Max value 1002.36
Min value 1000.55

DEICED TRUE TEMP (DEG K)
No of obs 406
Mean 286.788
Standard dev 0.115593
Max value 287.078
Min value 286.524

DEW POINT (DEG K)
No of obs 406
Mean 286.916
Standard dev 0.339518
Max value 287.394
Min value 285.651

OZONE MIXING RATIO (PPB)
No of obs 406
Mean 33.5270
Standard dev 2.82001
Max value 38.4940
Min value 22.2055

CORR SURFACE TEMP (DEG K)
No of obs 406
Mean 289.050
Standard dev 0.283423
Max value 289.692
Min value 288.647

POT TEMP (DEG K)
No of obs 406
Mean 286.690
Standard dev 0.121005
Max value 286.947
Min value 286.435

RADAR HEIGHT (METRES)
No of obs 406
Mean 99.2823
Standard dev 2.85336
Max value 106.141
Min value 89.9723

CORRECTED LATITUDE (DEGREES)
No of obs 406
Mean 36.5051
Standard dev 2.842689e-02
Max value 36.5808
Min value 36.4809

CORRECTED LONGITUDE (DEGREES)
No of obs 406
Mean -2.65007
Standard dev 5.99970
Max value -2.15389
Min value -123.223

NORTHWARD WIND COMPT (M S-1)
No of obs 406
Mean -3.65643
Standard dev 18.3145
Max value -1.36498
Min value -371.153

EASTWARD WIND COMPT (M S-1)
No of obs 406
Mean 0.989041
Standard dev 19.9504
Max value 400.508
Min value -26.7834

VERTICAL WIND COMPT (M S-1)
No of obs 406
Mean -13.1895
Standard dev 10.2317
Max value -11.2047
Min value -217.359

WIND SPEED (MS-1)
No of obs 403
Mean 2.97515
Standard dev 1.00073
Max value 7.53599
Min value 1.51929

WIND DIRECTION (DEG)
Mean 344.864

TRUE AIR SPEED (M S-1)
No of obs 406
Mean 93.5585
Standard dev 0.610848
Max value 95.8040
Min value 91.7603

HEADING (DEG)
Mean 286.401

A503 15-DEC-96 R15 300' From 144705-150207 *Plotted 20-Jan-1997 16:20*

STATIC PRESSURE (MB)
No of obs 903
Mean 1001.13
Standard dev 0.293014
Max value 1002.61
Min value 1000.29

DEICED TRUE TEMP (DEG K)
No of obs 903
Mean 285.978
Standard dev 0.570306
Max value 286.829
Min value 284.985

DEW POINT (DEG K)
No of obs 903
Mean 285.987
Standard dev 0.655739
Max value 287.467
Min value 284.362

OZONE MIXING RATIO (PPB)
No of obs 903
Mean 38.9220
Standard dev 3.34432
Max value 44.0705
Min value 24.7432

CORR SURFACE TEMP (DEG K)
No of obs 903
Mean 289.008
Standard dev 0.617448
Max value 290.198
Min value 288.091

POT TEMP (DEG K)
No of obs 903
Mean 285.886
Standard dev 0.578662
Max value 286.739
Min value 284.894

RADAR HEIGHT (METRES)
No of obs 903
Mean 95.4844
Standard dev 3.31591
Max value 101.495
Min value 79.0070

CORRECTED LATITUDE (DEGREES)
No of obs 903
Mean 36.2226
Standard dev 0.207331
Max value 36.5784
Min value 35.8604

CORRECTED LONGITUDE (DEGREES)
No of obs 903
Mean -3.05226
Standard dev 5.79568
Max value -2.56551
Min value -128.149

NORTHWARD WIND COMPT (M S-1)
No of obs 903
Mean -4.24567
Standard dev 4.74600
Max value 115.683
Min value -69.1531

EASTWARD WIND COMPT (M S-1)
No of obs 903
Mean -2.63014
Standard dev 10.0836
Max value 284.475
Min value -72.0065

VERTICAL WIND COMPT (M S-1)
No of obs 903
Mean -12.4093
Standard dev 4.11125
Max value 7.78398
Min value -133.018

WIND SPEED (MS-1)
No of obs 899
Mean 5.46228
Standard dev 1.95010
Max value 9.21428
Min value 2.04885

WIND DIRECTION (DEG)
Mean 31.7777

TRUE AIR SPEED (M S-1)
No of obs 903
Mean 93.9663
Standard dev 1.27319
Max value 97.6469
Min value 87.0045

HEADING (DEG)
Mean 206.099

A503 15-DEC-96 R16 300' From 153049-153811 *Plotted 20-Jan-1997 16:22*

STATIC PRESSURE (MB)
No of obs 443
Mean 1008.77
Standard dev 0.276881
Max value 1009.44
Min value 1008.07

DEICED TRUE TEMP (DEG K)
No of obs 443
Mean 287.378
Standard dev 0.265669
Max value 287.741
Min value 286.815

DEW POINT (DEG K)
No of obs 443
Mean 286.978
Standard dev 0.418422
Max value 287.945
Min value 285.935

OZONE MIXING RATIO (PPB)
No of obs 443
Mean 39.9986
Standard dev 1.06594
Max value 42.9072
Min value 37.6000

CORR SURFACE TEMP (DEG K)
No of obs 443
Mean 289.229
Standard dev 0.511091
Max value 290.344
Min value 288.455

POT TEMP (DEG K)
No of obs 443
Mean 286.663
Standard dev 0.260664
Max value 287.043
Min value 286.079

RADAR HEIGHT (METRES)
No of obs 443
Mean 32.1115
Standard dev 2.22485
Max value 37.9337
Min value 26.4109

CORRECTED LATITUDE (DEGREES)
No of obs 443
Mean 36.2904
Standard dev 8.901506e-02
Max value 36.4380
Min value 36.1315

CORRECTED LONGITUDE (DEGREES)
No of obs 443
Mean -1.67739
Standard dev 7.903489e-02
Max value -1.54925
Min value -1.82132

NORTHWARD WIND COMPT (M S-1)
No of obs 443
Mean -1.61838
Standard dev 1.10198
Max value 0.200981
Min value -4.45443

EASTWARD WIND COMPT (M S-1)
No of obs 443
Mean 2.25505
Standard dev 0.927499
Max value 4.03119
Min value -0.665298

VERTICAL WIND COMPT (M S-1)
No of obs 443
Mean -11.7774
Standard dev 0.500210
Max value -10.1695
Min value -12.8356

WIND SPEED (MS-1)
No of obs 443
Mean 3.04707
Standard dev 0.700568
Max value 5.01145
Min value 0.718385

WIND DIRECTION (DEG)
Mean 305.666

TRUE AIR SPEED (M S-1)
No of obs 443
Mean 92.9376
Standard dev 1.24890
Max value 96.8005
Min value 89.5687

HEADING (DEG)
Mean 144.322

A503 15-DEC-96 R17 300' From 154238-155240 *Plotted 20-Jan-1997 16:23*

STATIC PRESSURE (MB)
No of obs 603
Mean 1001.73
Standard dev 0.529941
Max value 1003.09
Min value 999.563

DEICED TRUE TEMP (DEG K)
No of obs 603
Mean 286.781
Standard dev 0.270445
Max value 287.202
Min value 286.216

DEW POINT (DEG K)
No of obs 603
Mean 288.347
Standard dev 0.208381
Max value 288.674
Min value 287.815

OZONE MIXING RATIO (PPB)
No of obs 603
Mean 39.5449
Standard dev 1.41502
Max value 42.8427
Min value 30.0029

CORR SURFACE TEMP (DEG K)
No of obs 603
Mean 289.274
Standard dev 0.717242
Max value 290.417
Min value 288.198

POT TEMP (DEG K)
No of obs 603
Mean 286.639
Standard dev 0.265766
Max value 287.048
Min value 286.067

RADAR HEIGHT (METRES)
No of obs 603
Mean 92.2358
Standard dev 4.18469
Max value 109.115
Min value 79.0070

CORRECTED LATITUDE (DEGREES)
No of obs 603
Mean 36.2571
Standard dev 0.136427
Max value 36.4967
Min value 36.0214

CORRECTED LONGITUDE (DEGREES)
No of obs 603
Mean -1.84525
Standard dev 5.14053
Max value -1.51666
Min value -127.856

NORTHWARD WIND COMPT (M S-1)
No of obs 603
Mean 0.235459
Standard dev 12.7875
Max value 2.94006
Min value -312.034

EASTWARD WIND COMPT (M S-1)
No of obs 603
Mean -1.89532
Standard dev 15.3820
Max value 373.047
Min value -6.79266

VERTICAL WIND COMPT (M S-1)
No of obs 603
Mean -11.8456
Standard dev 3.79054
Max value -9.37976
Min value -103.947

WIND SPEED (MS-1)
No of obs 601
Mean 2.94955
Standard dev 1.47597
Max value 6.89014
Min value 0.788695

WIND DIRECTION (DEG)
Mean 97.0817

TRUE AIR SPEED (M S-1)
No of obs 603
Mean 93.2928
Standard dev 0.926966
Max value 95.1254
Min value 90.4062

HEADING (DEG)
Mean 338.898

A503 15-DEC-96 R18 300' From 155657-160341 *Plotted 20-Jan-1997 16:25*

STATIC PRESSURE (MB)
No of obs 405
Mean 1008.65
Standard dev 0.417054
Max value 1009.60
Min value 1007.45

DEICED TRUE TEMP (DEG K)
No of obs 405
Mean 287.335
Standard dev 0.202424
Max value 287.574
Min value 286.619

DEW POINT (DEG K)
No of obs 405
Mean 288.709
Standard dev 0.210059
Max value 289.258
Min value 288.285

OZONE MIXING RATIO (PPB)
No of obs 405
Mean 39.2578
Standard dev 1.45472
Max value 42.6698
Min value 33.4980

CORR SURFACE TEMP (DEG K)
No of obs 405
Mean 288.822
Standard dev 0.471351
Max value 289.853
Min value 288.272

POT TEMP (DEG K)
No of obs 405
Mean 286.630
Standard dev 0.210456
Max value 286.883
Min value 285.948

RADAR HEIGHT (METRES)
No of obs 405
Mean 33.3434
Standard dev 3.47625
Max value 42.9517
Min value 25.1099

CORRECTED LATITUDE (DEGREES)
No of obs 405
Mean 36.3686
Standard dev 9.252184e-02
Max value 36.5235
Min value 36.2048

CORRECTED LONGITUDE (DEGREES)
No of obs 405
Mean -1.70885
Standard dev 4.437180e-02
Max value -1.64393
Min value -1.79514

NORTHWARD WIND COMPT (M S-1)
No of obs 405
Mean -1.80949
Standard dev 1.22059
Max value 0.370667
Min value -4.67606

EASTWARD WIND COMPT (M S-1)
No of obs 405
Mean 1.16433
Standard dev 0.378967
Max value 2.03519
Min value -4.410553e-02

VERTICAL WIND COMPT (M S-1)
No of obs 405
Mean -11.5392
Standard dev 0.625744
Max value -10.0231
Min value -13.8537

WIND SPEED (MS-1)
No of obs 405
Mean 2.31353
Standard dev 0.953488
Max value 4.77010
Min value 0.509954

WIND DIRECTION (DEG)
Mean 327.240

TRUE AIR SPEED (M S-1)
No of obs 405
Mean 92.6947
Standard dev 0.987256
Max value 94.8737
Min value 90.6537

HEADING (DEG)
Mean 159.020

Glossary

Aircraft Position, Speed and Attitude

- **Navigation:** The aircraft carries GPS, OMEGA, and inertial navigation systems.
- **Pressure height:** is based on the standard atmosphere as specified by the International Civil Aviation Organisation (sea level pressure of 1013.25 hPa). Pressure height is quoted in terms of Flight Levels (height in hundreds of feet *e.g.* FL100 = 10000 feet).
- **Radar height:** altitude of the aircraft above surface, measured by radar.
- **Time:** All times are UTC.

General meteorology

- **Tephigrams:** are given for every major profile of each flight. A tephigram is a thermodynamic diagram (temperature (T) - entropy (ϕ) diagram) used to assess the static stability of a given atmospheric profile. Other meteorological organisations use similar diagrams such as the Emagram or the Skew T log p diagram.
- **Deiced true temperature:** air temperature with corrections for aircraft speed and altitude.
- **Potential temperature:** the temperature that a parcel of air would have if it follows a dry adiabatic lapse rate to the 1000 hPa level.
- **Dew point:** dew point (the temperature at which a sample of air would just become saturated with respect to a plane surface of water if cooled at a constant pressure) calculated from the chilled mirror General Eastern hygrometer.
- **FWVS Dew point:** dew point calculated by use of the Lyman-α spectroscopic instrument "the fluorescence water vapour sensor".

Cloud Physics

- **PCASP:** The Passive Cavity Aerosol Sampling Probe counts number concentrations (number per cm^3) of particles in 15 channels spaced pseudo-logarithmically over the diameter range 0.10 μm to 3.00 μm, to provide a particle size distribution over this range.
- **FSSP:** The Forward Scattering Spectrometer Probe is used to measure water droplets in the size range 0.5 to 47.0 μm diameter (cloud droplets). It has four range settings, each of which is divided into 15 size channels.

Natural Environment Research Council

ARASF

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